

AGENDA
Commission Workshop
November 30, 2018
9:00 a.m. – 3:30 p.m.
Ephrata Headquarters Building, 30 C ST SW, Ephrata, WA 98823
Commission Room

An Executive Session may be called at any time for purposes authorized
by the Open Public Meetings Act

<u>9:00 am – 9:15 am</u>	Safety Briefing / Meeting Overview – Kevin Nordt
<u>9:15 am – 10:45 am</u>	Reserve Study – Bonnie Overfield, Devon Williams, Cary West
<u>10:45 am – 11:00 am</u>	BREAK
<u>11:00 am – 12:00 pm</u>	Debt Program – Bonnie Overfield
<u>12:00 pm – 12:30 pm</u>	Lunch
<u>12:30 pm – 2:00 pm</u>	Technology Road Map – Derin Bluhm
<u>2:00 pm – 2:15 pm</u>	BREAK
<u>2:15 pm – 3:15 pm</u>	Human Performance Indicator – Rich Wallen
<u>3:15 pm – 3:30 pm</u>	Closing Comments / Adjourn – Kevin Nordt

ANALYSIS – FUNDING OF UTILITY PLANT, INTERGENERATIONAL EQUITY GRANT PUBLIC UTILITY DISTRICT WHITE PAPER

**Draft 8/15/2018*

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Bonnie Overfield, Treasurer & Senior Manager of Finance*

Executive Summary:

The District desires to implement a rate payer intergenerational equity approach on how utility plant is financed. An analysis to evaluate industry practices, current state, and future outcomes suggests the District employ a policy and associated procedures that would aid in financing decisions to better align the rate payer's effective contribution of utility plant assets consistent with the benefit provided to the rate payer over the duration the assets are financed. At the present state, past financial policy has not focused on intergenerational equity specifically resulting in a gap for this desired strategy. This paper discusses standard industry approaches, District considerations/ background, and the recommended policy approach for consideration. Analyzing previously established District financial metrics was not in the scope of this analysis and assumed as predetermined policy targets.

Problem Statement(s):

The District lacks a formal policy approach on financing utility plant and a codified programmatic approach to evaluate and monitor status. Prior analysis and direction from management indicates a desire to put into place a program to deliver intergenerational equity related to effective rate payer contributions toward financing the needed utility plant. Indications of a "mismatch" are present in the areas of balance sheet leverage, alignment of duration of financing the assets, and the cash flow relationship over the benefit period of the assets.

Contents:

Executive Summary

Problem Statement

Discussion and analysis

- *What is "Intergenerational Equity" related to financing utility plant?*
- *How can Intergenerational Equity be evaluated?*
 - *Balance sheet- leveraged amount of debt to overall equity of utility plant*
 - *Alignment of duration of financing years to life of assets*
 - *Cash flows- matching dollars in an equitable manner to the utility rate base for which the assets benefit*
 - *What is Grant's (District) state in relation to the evaluation areas?*
 - *History of the District's change in financing policy resulting in today's portfolio*

Recommendation

Discussion and Analysis:

WHAT IS INTERGENERATIONAL EQUITY?

Intergenerational equity in economic, psychological, and sociological contexts is the concept or idea of fairness or equitable results between generations. The question of intergenerational equity at the District refers to matching costs associated with providing a benefit to customers during a timeframe that fairly represents the financial share of the cost to the customer for the benefit they will be receiving. Due to various contractual and financial policy reasons, the District's policy approach for debt issued to finance capital construction historically was not intended to solve to generational cash flow targets necessarily. The District has made efforts to address this and has scoped out future efforts/options to move closer to the concept of generational fairness.

HOW CAN INTERGENERATIONAL EQUITY BE EVALUATED?

There are a several approaches and practices to assess the generational "health" of the utility. The first is by examining the balance sheet of the utility to determine how levered the utility is with debt or how much of the debt burden is being placed on future generations. The second is to examine the tenure of the bond repayment schedule against the underlying benefits (in years) expected to be received by those assets. This could reveal a mismatch in terms of debt being paid off sooner than the benefits received, or the debt has a longer duration than desired. The third would be evaluating, from a cash flow perspective, the timing in which dollars were fairly contributed by the rate payer from year to year in activities that funded capital improvements (cash financing capital and debt service via revenue streams or available cash) to determine if a fair relationship exists. These three testing areas may work parallel but often could have impacts; addressing one area could impact other areas. A utility does not arrive at a portfolio position over night; policy and financing decisions of the past and present result in the ultimate approach. Utility practice, financial industry standards, regulations and laws also are a large part of past financial policy and need to be evaluated going forward when policy approaches are desired to be changed or codified.

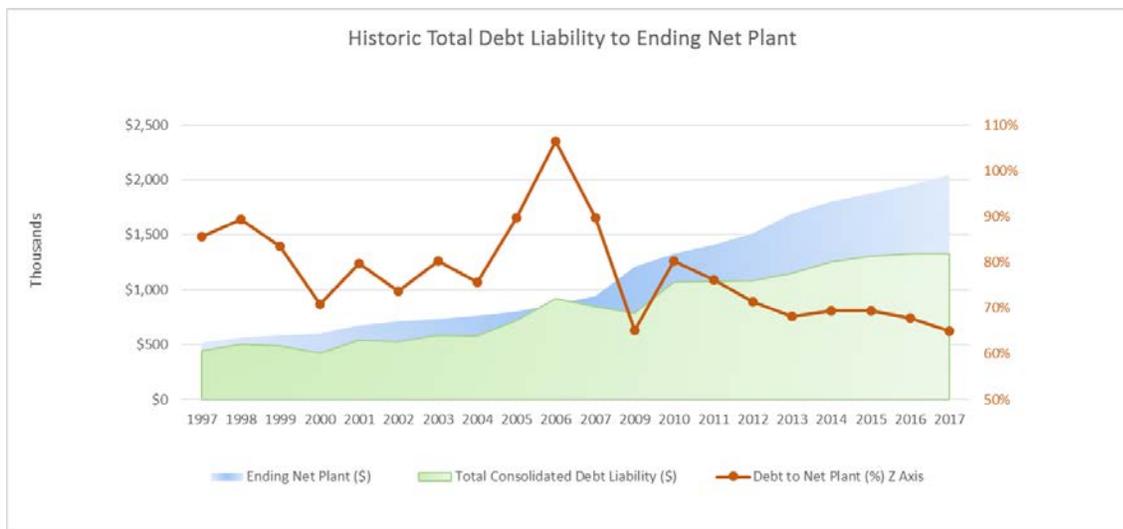
Evaluation Criteria 1- Leverage

The District Strategic Plan targets a 60% leverage ratio on a steady state basis (60% debt funding of assets, 40% cash funding) via the Debt to Net Plant metric. Note, this metric is not intended as a comparison of full equity on the balance sheet (cash/investments/non-utility plant assets are excluded), it is a pure focus on funding of utility plant. It is important to note the difference, especially when comparing to other utilities that may be targeting a "Debt to Equity" or any other metric that has a different calculation.

For the District, by achieving and maintaining the targeted Debt to Net Plant metric it means that each year, on an ongoing basis (when fully implemented), the capital funding of utility plant assets will be paid by the rate payer at an equitable share through time due to a consistent approach. Utility plant is defined as those assets used by the District as part of the overall utility system that meet the District's capitalization policy (effectively > \$10k in cost and > 5 years of useful life). If the overall consolidated metric is managed to a reasonable range surrounding the 60% steady-state target when the asset portfolio changes over time, the funding contribution would move in a relative manner. Managing to a balance sheet leverage outcome is a recommended and common approach which is demonstrated by use of similarly positioned utilities within the public power industry and cited by rating agencies as a criteria of financial health.

The District has a significant utility plant net value (net of accumulated depreciation) of over \$2 billion dollars (\$2.045B FY '17) of which the generation and delivery systems consolidate under as a vertically integrated utility. On the debt side of the balance sheet the District had \$1.3 billion for the same period in external revenue bond liabilities, resulting in an effective Debt to Net Plant ratio of 64%. In 2013 the District formally adopted its strategic plan which included the leverage ratio metric to begin in 2014. This leverage ratio metric was implemented to improve from the experienced average 80+% range over time to a steady state target by year 2020, and maintain at that level going forward. This was a significant change in economic terms in which an analysis and associated implementation plan supported the direction. The programmatic implementation plan to improve leverage utilized the excess cash above the Electric System liquidity targets to internally fund capital at the Priest Rapids Project (PRP). From 2014 – 2017, \$249.3 million in aggregate principal of Junior Lien Bonds (JLB's) were deployed as part of this policy (see appendix for additional details). Retail rates, in part, combined with wholesale revenues and other economic factors were contributory to internal cash levels providing the needed equity to internally finance utility plant with equity and to ultimately offset external debt. Note: the retail rate setting process has other policy and factors that drive specific outcomes.

The graph below shows historically the Debt to Net Plant results of the District from 1997 thru 2017. The dotted orange line is tied to the Z axis on the right and shows the effective ratio of external Debt to Net Plant as of the end of each fiscal year.



The results in the above graph speak to a number of things during past twenty years. Up until 2013 the District's financial policy did not focus on the consolidated aggregate ratio as a reporting mechanism. The financial policy implemented to this point was to 100% debt finance the PRP construction program with a monitoring metric that the net book value would not exceed the amount of debt for the two developments (Wanapum and Priest Rapids Dams). The Electric System policy was to revenue finance at least 50% of the Electric construction program with revenues. These metrics were monitored separately. The increase in the District's debt liability in 2005 – 2006 to 106% of its ending net plant was due to a variance in debt issuance timing versus assets being placed in service. Relicensing expenditures totaling \$57.1M were being treated as deferred relicensing costs until the license was issued in 2008 when those costs were moved to net plant. The majority of the District's utility plant is located at PRP (FY

'17 71% of total) along with 84% of the outstanding District debt liability (note this is excluding the JLB's deployed to date, otherwise would be a higher percentage). Naturally, when the updated policy to evaluate Debt to Net Plant in aggregate was arrived at, it resulted in a large leverage calculation due to the significant weighting of PRP plant (100% debt funded in 2010) in relation to the total portfolio.

Another key component of the District's historic results (and to consider impact going forward) is the timing of when debt was issued and capital was spent. The District typically forecasted debt to be issued for projected capital work in a 2-3 year time frame causing the effective debt liability at the end of the year to spike in relation to the plant. As principal gets paid down on the debt and capital work ensues, the ratio declines. In particular, in 2005 and 2006, the District issued \$371 million at Priest and Wanapum for capital work that had a delayed implementation schedule (funds from the '06 bond issue were exhausted in 2010). In 2010, \$296 million in new debt was deposited into the construction fund for capital work resulting in the peak in leverage. In 2014, the District effectively began lowering leverage by implementing the JLB program (described below) combined with smaller sized, more frequent "dollar cost averaging" debt issuances (taking smaller portfolio positions versus larger single positions to get a more true average market representation and reduction in market rate volatility).

BACKGROUND ON PRP 100% DEBT FUNDING OF UTILITY ASSETS PRIOR TO 2014 AND JLB IMPLEMENTATION

The original PRP power sales contracts prescribed that all capital was 100% financed with revenue bonds on a 30 year "level" debt service basis (or based on the useful life, whichever was less). In 2005 & 2009 the new contracts for Priest and Wanapum were respectively implemented under one consolidated contract for the combined licensed project which provided greater flexibility in how capital improvements were financed. New procedures were implemented in 2014, consistent with the terms in the contracts that provided the District flexibility in how construction could be financed related to internal equity financing and debt repayment that differed from the 30-year/ level billing term. The new contracts contained specific provisions on how the purchasers would be billed for their portion of annual power costs, which debt service is a component of. As a result of the new procedures the District began implementing the internal financing JLB program described above (primarily targeted to improve leverage but also provided economic value of cost reductions and cash flow optimization). Excess cash beyond the Electric System's operational/liquidity needs are made available for the long term bond payable from PRP to the Electric System over a set amortization schedule. This program is consistent (compliant) with state financing laws, required accounting provisions, and the power sales contracts.

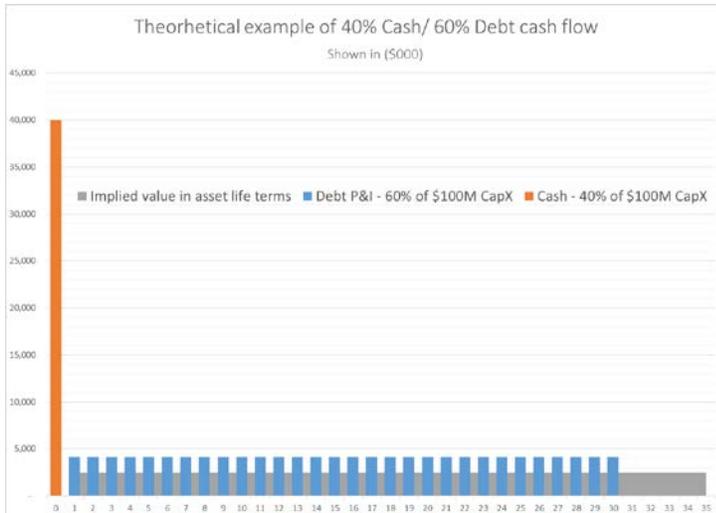
Within the public power industry it has been a common approach on financing generation assets with debt and align the repayment over the term of the asset lives (it is typical for assets to have 30-50 year average lives in hydro utilities). It is also common with public utilities that the distribution/transmission assets would have a larger portion that is cash financed (most in the range of 40-60% from cash flow /rate revenue). The fundamental philosophy behind this is that distribution assets tend to have shorter asset lives (on average from 15-25 years) and the notion that a certain amount of ongoing capital improvement is needed annually to maintain the utility plant system in working order is typically built into either cash or accrual rate recovery framework and included in setting rates. As a reference, Snohomish PUD has a policy of no more than 40% of non-generation assets are financed with debt and Seattle City Light's policy is to target approximately 40% of total plant funding from cash. Omaha Public Power targets a 50% Debt to Equity Ratio (includes cash/investments) and builds into current year rate setting

all of the transmission/distribution capital costs with a target to largely debt fund generation capital with debt. In recent industry finance meetings this was also discussed and utilities are commonly focusing cash contributions for capital programs on an annual basis in the range of 40-50%. Beyond traditional rate making elements, funding approaches also are referenced by rating agency criteria to maintain bond credit ratings as one financial consideration in a suite of balanced economic factors in their rating criteria. Additionally, rating agencies have criteria on assessing the appropriate level of capital improvements being invested in the system as an indication of going-concern health. Per Fitch's rating criteria, a high average age of plant (> 20 yrs.) would require a greater than 80% of depreciation expense investment in system assets in order to not underinvest in a capital program. American Public Power Association (APPA) has also published guidelines that point to prudent utility plant reinvestment levels. This speaks largely to the general order of magnitude that should be expected dollar wise to be reinvested in the utility plant program (as reference FY '17 consolidated depreciation for Grant was \$66 million).

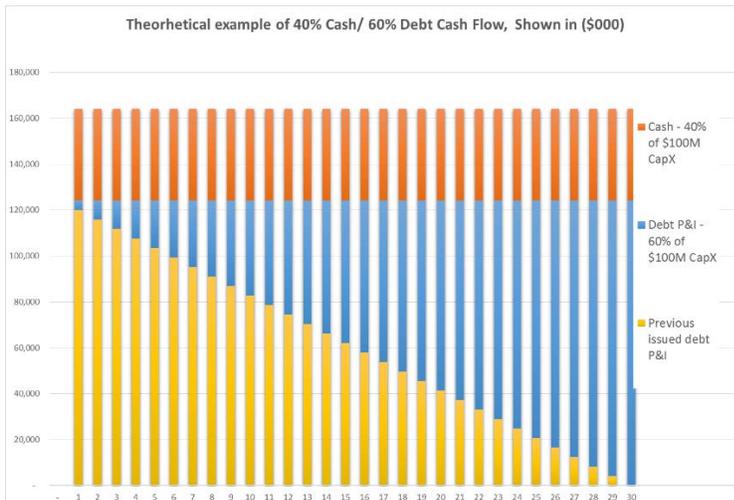
DEBT TO NET PLANT EXAMPLE

When debt is issued over the useful life of the asset on a level basis it naturally aligns the repayment of the asset with the cash flows and received benefits. For example, if a 10-year asset was put into service, 40% of the cost of that single asset would be paid for in year 1 rates and the remaining 60% would be debt financed; with the principal and interest being paid over ten years and the customer would receive electric benefit of that asset over the same ten year timeframe. The nature of utility plant is that every year improvements to the existing system or additions to the system are needed; therefore a perpetual 40% in year 1 rates becomes a level set expectation and "fair" over each year and to each generation creating equity. When debt is 100% financed with zero cash contribution, it places the full burden of payment on future generations and, if not properly managed, can become difficult related to rate recovery and general financial planning. Consistently applying the financing strategy will evenly layer the debt burden for the needed system improvements for future generations as the system is maintained to provide current and future ongoing benefit.

The chart below shows a single year amortization of \$100 million of capital improvements with the associated 40% cash and 60% debt financing. The example illustrates for those improvements 40% would be borne in the first year by rates and the smaller annual amount represents the longer term amortization of the 60% debt repayment that would then be paid in revenue requirements for those years (note in this case it was assumed to use the industry standard of 30 year amortization even though the asset life is indicated to be 35 years, which we will address later the disconnect of funding and long lived assets). This example is meant to demonstrate a single year capital improvement funding approach, but does not consider the overall effects of prior and future debt and capital improvements.

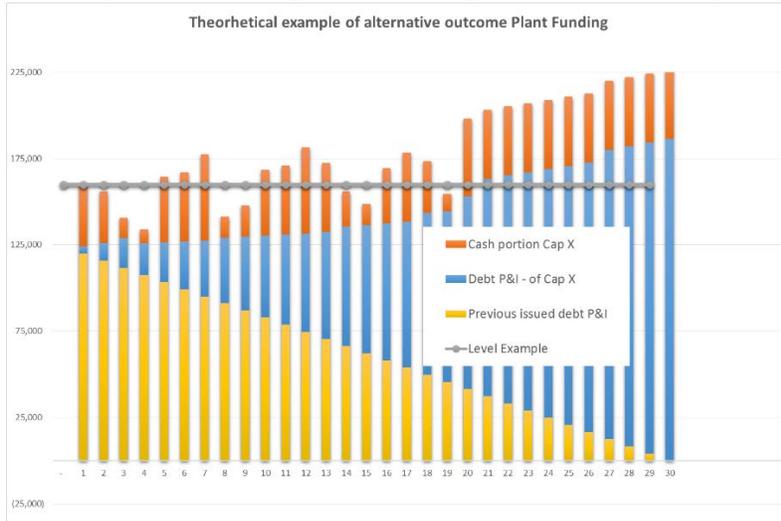


The next example illustrates when this is fully in practice (assuming a theoretical \$100 million of annual capital improvements financed at the same 60/40 allocation each year) that there would be a balanced equitable distribution (this assumes the same 35 year average asset example amortized over 30 years for each annual issuance, no inflation in capital). Understanding, from this simple calculated demonstration, that annual capital dollars would be different and the existing debt repayment schedule likely was not flat. However, to understand the concept the below chart demonstrates the logic.



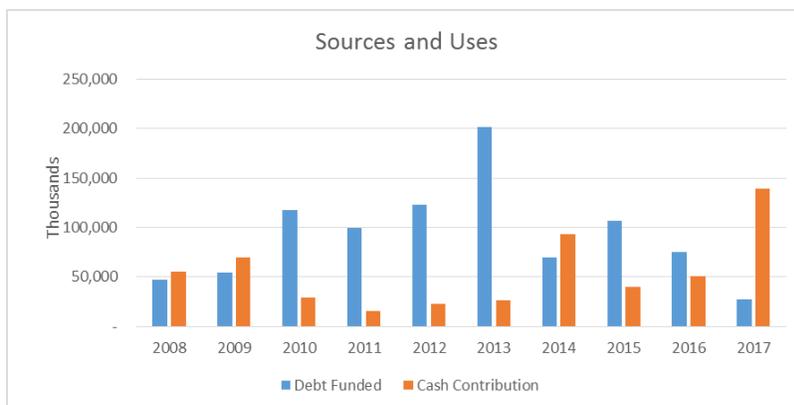
An alternative outcome, using the same assumptions as above, but varying the cash contribution level could result in a higher (or lower) leverage when the timing and amount of debt is modified. If inconsistent over time and lower contribution levels of cash are planned for capital the leverage ratio would increase, meaning an unfair burden being placed on future generations. See below an alternative scenario of the funding approach. Cash funding amounts were adjusted annually for the first 20 years (increased and decreased) which results in changes to debt. The previously issued debt was assumed to not change. The grey dotted line for the “level example” represents the cash flow of a Debt to Net Plant ratio set to 60% steady state leverage (debt) shown above. Again, as stated in the simple earlier example the same assumptions were used for annual capital funding and no inflationary rate applied. While there are some years where the single year cash flow is lower (largely nearer term), the aggregate

effect of the year's with lower cash contribution ultimately over time increases the debt service for the shortfall years where large bond funding was needed to fill up the gap.



The above examples are simple in nature to demonstrate the concept and impact. In reality, dollar amounts will vary as capital needs change. During the years of implementing the PRP license, a significant amount of capital was added as a result, far above the basic level of ongoing needed improvements. Similarly the turbine/generator upgrades at Wanapum and Priest Rapids as well as large transmission projects (Such as the Rocky Ford 230kv line) will place a higher demand in certain years. The response to the Wanapum Fracture in 2014 and other non-planned projects resulted in higher than expected funding levels, ultimately using a combination of cash and higher levels of debt funding. Over time costs will also inflate increasing the real value of the capital further into the future.

In looking at the historical District results (on a percentage of a whole basis to remove anomalies some of which are stated above) the District has not applied a standard set annual percentage to funding capital from equity and debt. Decisions were based on other financial policy/considerations which resulted in the higher Debt to Net Plant as described in the earlier chart. In the past 4 years the cash contribution has been much larger due to the intentional use of the JLB's to improve the leverage ratio, moving closer to the desired 60% target.



The general take away is that without a formal policy approach and discipline to manage to capital improvement financing at a 60% leverage state, unequitable outcomes across individual years and

generations will occur. In years where overall leverage is high, future generations are paying a higher share of the proportionate asset costs. In years where the overall leverage is low, those rate payers are paying a higher relative value from a funding perspective. By managing to the consistent 60% it not only provides financial stability from an external economic perspective but is also an effective litmus test from an “inception to date” perspective of balancing future payment obligations with current year cash needs. In context of overall management to intergenerational fairness it must be used in coordination with other management techniques to balance other constraints such as cash flow shaping of debt service and fully matching the debt repayment to the asset lives. The next two evaluation criteria can be used in conjunction with this metric.

Evaluation Criteria 2- Duration of Bond Years to Asset Lives

In a perfect example if a utility financed an asset with debt, seeking to set the repayment period of the principal to align with the years of benefit is a logical and desired approach. In the earlier example of the above section a hypothetical situation was used for a 35 year asset to have a 30 year bond amortization due to that being the standard municipal market product available (also combined with state law and other federal regulations regarding municipal debt). From the onset, the final debt term would have a mis-match to the assets being financed. The banking and financing industry often examines a portfolio in weighted average terms to level set multiple varying asset lives and multiple varying bond repayment structures to arrive at an “apples to apples” comparison. In some cases the debt structure impacts the ratio as longer dated principal bonds would carry a higher average bond year life (and also have unique cash flows associated with them which could be a driver of the schedule in part).

The current ratio of bond years to asset lives is 32% (13.6 average bond years / 43.2 weighted average remaining useful life of plant.) The composition of the numerator and denominator of this calculation have unique attributes that are helpful to understand in how the District resulted in this ratio. Note: bond years was taken from the 03/31/18 Debt Report and plant years taken from the 2017 year end Fixed Asset Register.

The District debt portfolio of \$1.3 billion (FY 2017) includes long term serial/term bonds, interest only bonds, variable rate bonds, short term put bonds, direct placed notes, federal interest rebate bonds, bullet/sinking fund bonds and internal equity bonds (JLBs). Characteristics of the bonds include exempt and taxable features and have a mix of 10 year calls, make-whole calls, and non-callable debt. The District’s revenue bonds have varying charge of revenue obligations (lien order) and have solely been used to finance capital programs. The District does not have general obligation bonds or bonds to finance operational expenses or revenue shortfalls. Bonds are issued connected to the revenue generating asset (PRP or Elec System). Attached in the appendix is the District’s debt report containing details of the debt portfolio as of 12/31/17.

The District’s asset register includes assets that have been placed into service and have varying terms of useful life. Depreciation is determined by the straight-line method over the estimated life of the asset. The District’s asset lives used for computing depreciation range from five to 100 years, currently with an average depreciation rate of 2.29% for the most recent full fiscal year (2017). The District writes down obsolete plant when assets are impaired. Attached in the appendix is the District’s asset register detailing details of assets in service as of 12/31/17.

The calculation of the weighted average life of the bond years / weighted average remaining life of assets (years) has been calculated as:

- Weighted Average Life of Bond Years
 - Weighted Average Maturity
 - (Sum of (Par Amount * Maturity Date))/Total Par Amount
 - Weighted Average Life
 - Time From Evaluation Date (Jan. 1 each year) to Weighted Average Maturity
- Weighted Average Remaining Life of assets = ((Net book value of asset / total net book value)(Asset Depreciation to date/ Asset original cost))*Asset life))

Bond Years versus Asset Life							
Weighted Avg. Bond Years/Weighted Avg. Remaining Life =						31.508% (WBY)*(WAL)	
Bond Years						Asset Life - Based on Gross Plant	
Evaluation Date (ED) 1/1/2018							
		(DM/ED)	(DO/TDO)	(DM)*(WT)			
*Debt Outstanding by Maturity (DO)	Maturity Date	Days to Maturity (DM)	Weighted % (WT)	Weighted Avg. Days	Data is calculated from Dec. 31, 2017 Fixed Asset Register		
\$37,425,562.98	01/01/19	365	3.43%	0	Total NBV	1,618,619,952	
\$38,765,562.98	01/01/20	730	3.55%	0	Sum(Asset NBV/Total NBV)	0.95	
\$40,170,562.98	01/01/21	1,096	3.68%	40	Average((Asset LTD Depr/Asset Orig Cost)*Asset Life))	25.97	
\$41,125,562.98	01/01/22	1,461	3.76%	55	Total Weighted Avg. Remaining Life (years) =	43.16	
\$40,365,562.98	01/01/23	1,826	3.69%	67			
\$35,695,562.98	01/01/24	2,191	3.27%	72			
\$36,975,562.98	01/01/25	2,557	3.38%	87			
\$38,360,562.98	01/01/26	2,922	3.51%	103			
\$39,800,562.98	01/01/27	3,287	3.64%	120			
\$42,560,104.00	01/01/28	3,652	3.90%	142			
\$44,310,104.00	01/01/29	4,018	4.06%	163			
\$45,935,104.00	01/01/30	4,383	4.20%	184			
\$47,045,104.00	01/01/31	4,748	4.31%	204			
\$44,270,104.00	01/01/32	5,113	4.05%	207			
\$44,510,841.00	01/01/33	5,479	4.07%	223			
\$44,385,841.00	01/01/34	5,844	4.06%	237			
\$50,860,841.00	01/01/35	6,209	4.66%	289			
\$51,450,841.00	01/01/36	6,574	4.71%	310			
\$49,640,841.00	01/01/37	6,940	4.54%	315			
\$51,640,841.00	01/01/38	7,305	4.73%	345			
\$50,510,841.00	01/01/39	7,670	4.62%	355			
\$52,610,841.00	01/01/40	8,035	4.82%	387			
\$35,290,000.00	01/01/41	8,401	3.23%	271			
\$31,095,000.00	01/01/42	8,766	2.85%	249			
\$32,470,000.00	01/01/43	9,131	2.97%	271			
\$14,265,000.00	01/01/44	9,496	1.31%	124			
\$3,495,000.00	01/01/45	9,862	0.32%	32			
\$3,670,000.00	01/01/46	10,227	0.34%	34			
\$3,855,000.00	01/01/47	10,592	0.35%	37			
\$1,092,557,315			100.00%	4964			
Weighted Avg. Bond Years (WBY)				13.60			
* Principal Assumptions: no JLBs, includes CREBs sinking fund deposits-not bullets, excludes VR debt service							
Calculations:							
Days to Maturity = Maturity date - Evaluation Date				Weighted Avg. Remaining Life = ((Asset NBV/Total NBV)/((Life to Date Depr/Orig. Cost)*Life))			
Weighted % = Debt Outstanding by Maturity/Total Debt Outstanding				Total Weighted Avg. Remaining Life = sum of weighted avg. remaining life of all assets			
Weighted Avg. Days = Days to Maturity * Weighted %							
Weighted Avg. Years = Total Weighted Avg. Days/365							

As shown above in the calculation table, and preceding paragraph explaining the calculation, the debt includes all external debt that would correlate to financial statements at the end of a fiscal period. Internal junior lien bonds are excluded. Bullet payments with no amortizing principal (included in above calc \$100M) are treated as maturing in the final year (hence a useful life of 30 years). CREB sinking fund payments are treated as an annual sinking fund amortization (despite the bullet terms) and have a shorter weighted life. Term bonds are also treated accordingly as a sinking fund vs the final maturity (ie 30 year term, principal amortizes in years 25-30).

There are a number of reasons as to why the District has a wide variance between bond years and assets. First, 100% of plant is not bond financed by design (steady state target being 60%, with actual results at 64% for FY 2017). The second contributing factor is much of the debt issued was capped at 30 years for a final maturity due to standard conventions in municipal finance (in WA state the cap on final maturity is 40 years, but dependent upon there being a market of investors to buy). The third contributing factor is the IRS tax provision for municipal bonds to not exceed 120% of the useful life of the prospective useful life calculation. A fourth factor is the majority of the debt issued at PRP has been “level-30” amortizations, which results in an average life of 17 years. This is because the final maturity is set at 30 years and principal and interest is solved to return near level combined debt service for the issuance. Bonds that had an interest only component for a portion of the term would have a larger average life as the principal would have a higher value. Note, this notion is of significant impact to the calculation (how the bonds are structured for repayment). A fifth factor is refunded bonds are typically amortized over the remaining original term on a uniform savings basis, meaning that in the instance where assets could have an average weighted life of 45 years were debt funded with a 30 year maturity leaving a gap of 15 years between the asset lives and the final maturity (and likely a wider gap on an average basis). In some cases historical financing decisions were made with the purpose to minimize financing costs or to place debt in certain years for economic reasons. When these decisions are made on debt shaping it results in bond years potentially being shorter (or longer) on an average basis, and can be used to modify the portfolio going forward.

The District has identified and built into specific transaction strategy the past several years improving the gap between bond years and asset lives as one of the primary focal points in balancing intergenerational equity. Due to updated contract purchaser terms at PRP and a desire to change the debt portfolio to improve the tenure of debt compared to assets, the District first focused efforts at PRP due to the bulk of debt weighted in the generation assets. In 2013, after significant analysis, the District implemented procedures to structure bond terms that met financial goals but provided necessary components to be consistent with the updated terms in the PRP long term contracts. The current contracts provide that the District can issue debt in any prudent manner but the billing provisions to the purchasers of recovery of power cost must be billed at 30 year level (or the max of the asset lives being financed). The 2013 analysis looked at industry best practices and identified that the lives of the District’s assets were much longer than the average lives of bonds outstanding. Several options were identified with the associated economic impacts if implemented. In 2013, PRP debt was issued with longer principal amortization to better align with District strategy. Additionally, the Electric 2011-I bonds were partially refunded for restructure purpose to extend the life of the bonds (45+ year assets that were financed sub 15 years). The remaining portion of the bonds that had long call dates and were otherwise uneconomic in 2013 were refunded and restructured in 2017. These transactions effectively increased the bond year calculation by 13.43 years, decreasing the gap between the financing tenure and the asset lives.

In evaluating a target to manage to for bond years to asset lives, the unique considerations of how debt is issued should be taken into consideration. Staying within state, federal, and financing industry laws and conventions are necessary to issue the debt and result in otherwise shorter average life outcomes. New money transactions can be structured in a manner to gradually move the needle closer to the target (each transaction will have a small impact considering the size of the existing portfolio). Restructuring and refunding existing debt can also be done in a manner to achieve these outcomes. A fundamental economic factor is that the shorter the debt is amortized the lower the overall cost; however that notion in some cases has resulted in decisions that reduced total cost irrespective of generational impacts and created short debt structures.

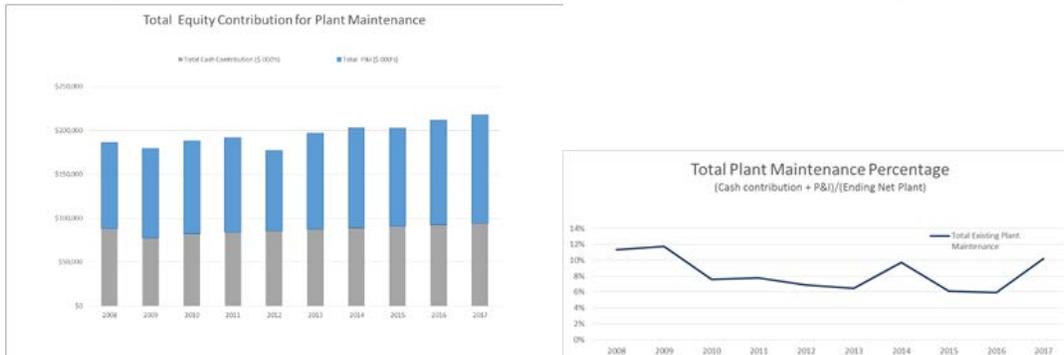
See target recommendation below in recommendation section for District management.

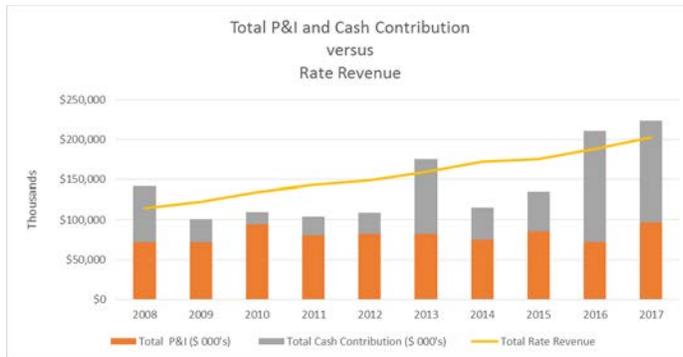
Evaluation Criteria 3- Cash Flow Matching

A fundamental economic test of benefits is the timeframe over which they are realized and paid for. Similar to test 2 on evaluating the total portfolio of bond years to asset lives, examining the cash flow cycle also can be an indicator of generational health. As mentioned in earlier sections, general guidance is provided within the industry and financial community regarding prudent reinvestment levels of utility plant. Considering that a utility similar to Grant will be continuously improving the system to remain reliable and effective, a known amount of new capital investment is inherent. With the leverage target set at 56-58% this means that each year's capital additions will be funded with debt at a level to maintain the leverage target and the remaining capital expenditures will be financed with cash. Each year the amount funded with debt can range from 20% to 100% and the remaining from cash up to 80%. Beyond the balance sheet test, the shaping of the debt repayment in addition to the annual cash contribution could be monitored

A fundamental test of "solvency" or coverage that can be tied to cash flow is Debt Service Coverage. The District's target is to manage at or above 1.8x, as set in the Strategic Plan. The target was determined based upon criteria to maintain the AA rating of the utility (set at the lower end of the range due to balancing with other metrics). Other metrics in the financial community exist that speak to cash flows similar to coverage such as the Fitch rating criteria of Debt to FADS (funds available for debt service) to measure debt service coverage.

Debt can have a number of repayment components that could shift the cash flows substantially. Bullet payments, deferred principal, and other measures can shift cash flows between years. While the absolute contribution amount in dollars may not be the best measurement, a relevant percentage that could scale to utility changes is a way that it could be examined. For purposes of the comparison, the plant financing costs of cash funding and debt service (principal and interest) can be compared against the relevant Net Plant for that period or against rate revenue (as a percentage of the total system) or other financial line items. This is somewhat of a "modified debt fraction" approach. The below two graph's show historic and possible future outcomes for "plant maintenance costs". Plant maintenance being defined as equity financing, principal due in the year, and interest due to bond holders in the year. The past ten years has shown a substantial amount of cash contribution as the District has moved to managing leverage to 60%. In comparison, on a percentage basis to the relevant Net Plant, the percentage has moved around substantially creating a noticeable trend evolving from a higher percentage down to a flatter trend when managed in tandem with the leverage metric.





Recommendation:

MANAGE DEBT SERVICE COVERAGE TO ENSURE RESULTS MEET OR EXCEED STATED TARGET

While not addressed above specifically as a generational test, debt service coverage is the primary financial “health test” used by the financial community and to support bond rating levels. The established strategic plan target is to maintain at or above 1.8x consolidated coverages. Debt strategies need to be mindful and in support of impacts to the coverage metric. By managing the leverage target accordingly with cash and financing overall in combination with cash flow timing, this metric from the denominator perspective of the debt service can be stabilized. Coverage does rely upon operational impacts such as revenues and expenses that are used in the numerator for funds available for debt service, so maintaining the debt side would need to be done in conjunction with forecasted outcomes when establishing debt schedules if different from a “level-30” basis (which is what will need to be done to make improvements to other metrics).

STAY THE COURSE TO MANAGE LEVERAGE TO 60% TARGET

The Debt to Net Plant is a steady state strategic metric that speaks to financial leverage primarily but also speaks to rate payer equity over time. If the 60/40 split is managed to the target each year the relevant rate payer is contributing a theoretical equitable portion from a balance sheet perspective. One approach is to structure the debt so that the principal payments equal at least 60% of the annual depreciation expense and this would allow managing to the 60/40 split. This approach could be maintained if you were starting at ground zero and didn’t have current outstanding debt issued using other structuring options. Another approach is to build in the notion in the annual budget that capital in any given year would be sourced from 40% rate revenue and 60% debt funding. In theory, this works when the capital plan net of depreciation provides room to manage annual cash flows in such a manner. Due to depreciation in the \$60+ million range and the rate of capital increase not as significant (due to being based on larger historical plant additions), the rate of change is difficult to manage and can be seen by the natural decline in the leverage ratio. See below the Q1 forecasted leverage results assuming the current capital plan and debt issued to meet the metric target. This combined with cash flow scenario testing suggest that the leverage ratio is difficult under current circumstances to be managed at an equal contribution percentage annually and indicates debt funding on an annual “sources and uses” perspective of 20-100% being needed to manage the leverage ratio annually. By approaching in this manner it impacts the District’s cash position which is difficult to keep both at target levels without over/under achieving either metric.

The District has made significant progress with the JLB’s being deployed. Evaluating where best to deploy equity financing internally going forward should be performed (queued up for 2019) as part of the overall strategy. Once the 60% target is met, developing a range or a band around the ultimate strategic plan financial metric would allow for compliance on a planning to actual results basis and also provide

room for unexpected events to not detrimentally impact the ratio. At this time, a suggested target would be for the adopted budget and forecast (with the integrated financing plans) to plan an end of year Debt to Net Plant of 56%-58% as an allowable forecasted range. If indications suggest that the upper or lower band is in jeopardy, components will need to be adjusted on a prospective, planned basis. This would include capital spending timing, timing of debt issuances, and evaluation of debt calls/defeasances when practical. To a smaller degree principal payment timing can also be analyzed (with the risk of impact to other metrics). In the event that the District has a sudden large increase in capital, the impact (depending on order of magnitude) would be easily absorbed with the lower planning band. For example, if the District was at 58% leverage, an unexpected \$200MM single year impact would move the ratio by 4% on average in the next ten years assuming it was 100% debt funded and based upon the existing capital forecast, debt repayments, and depreciation schedules. Once the District reached a leverage of 58%, the amount to move the ratio from 58% to 60% would be a \$100M increase in capital expenditures in that same year to be 100% debt financed. The range also would help in the timing of debt. When smaller issuances are envisioned it may be practical to reduce the frequency in the capital markets to maximize economics and issue debt that would fund longer capital needs (while staying under IRS requirements). The result of this could have temporary bumps in the leverage metric at year end. In developing the model it will be essential to be mindful of all impacts which additionally include depreciation rates, capitalized interest, refundings/defeasances, capital spending changes, and other entries impacting either plant or debt balance sheet line items.

The graph below shows the forecasted ending net plant value in comparison to the forecasted debt liability after implementing the 60/40 debt to net plant metric maintaining a range of 56% - 58% when issuing debt to fund capital expenditures each year. The required debt liability to maintain the 60/40 debt to net plant metric is shown in the orange line (would be solved to with cash contributions). The graph to the right shows the forecasted contribution levels between cash and debt based upon the Q1 Financial forecast projected capital and other financial outcomes.



STAY THE COURSE TO MANAGE BOND YEARS TO ASSET LIVES AND CODIFY FORMAL POLICY APPROACH

The District has made good progress and based several past financing decisions on improving this metric as it is a fundamental cornerstone to financing assets (matching tenures). There are challenges present with varying constraints (including limited ability to refund economically with advance refunding being eliminated in 2017 from the tax bill). Target as a proxy an overall consolidated metric to use as a monitoring metric to help guide financing decisions. Task staff to develop strategy with associated impacts of financing decisions in support of improving this metric.

The metric for calculating the bond years to asset lives is to monitor that the bond maturity dates of an issuance closely matches the lives of the assets being funded. The calculation for this metric modifies the asset lives to consider only those assets that have been bond funded and the percentage of assets

that will be a benefit to the rate payers during the debt repayment period of the bonds. Taking into consideration the long lived asset lives of the District and industry standard maturities of muni bonds, a modified steady state target of 70 – 75% is being recommended. Below is the calculation and the components that are included in each data set.

Calculation: Bond Years/(Weighted Average Asset Lives * % assets debt funded * % of assets in same time period as bond maturities)

Bond Years:

- Average weighted life of each bond maturity to the total outstanding debt
- Average bond years is updated when there are new bond issuances, refundings or restructurings of current outstanding issuances, and also after principal payments are made each January.

Weighted Average Asset Lives:

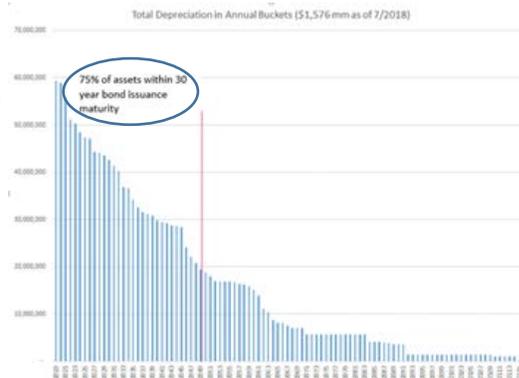
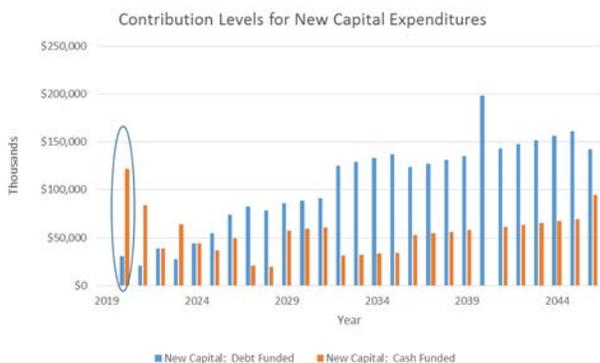
- The Districts current asset lives is calculated from the most current annual fixed asset reconciliation
- Total NBV of each asset to the total NBV of all assets

% Assets debt funded:

- Annual strategic plan leverage target = 60%

% Assets in same time period:

- Percent of annual depreciation to total depreciation during the same time period as the bond issuance maturity dates



Year	Bond Years	Weighted Average Asset Lives
2017	13.7	39
2018	14.0	45
2019	13.6	43
2020	13.5	48

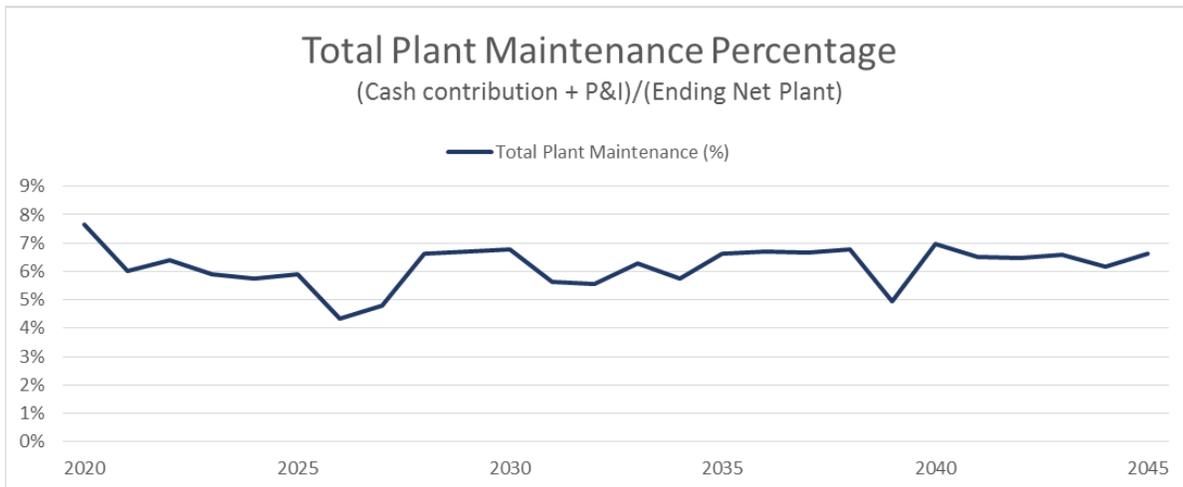
Example Calculation: 13.6/(43* 60% debt funded * 75% assets in bond maturity schedule) = 70%

IMPLEMENT A CASH FLOW MONITORING METRIC AND BASE FINANCING DECISIONS IN SUPPORT OF METRIC

The Plant Capital Maintenance (CM) metric is a way to monitor the relative contribution to the resulting plant base over time by looking at the percentage that is spent annually in cash to maintain the

growing/retiring system (equity capital financing plus principal and interest expensed). Over time this can be monitored to show the relative portion in the current year revenue requirement that is spent to maintain the system, a stable percentage shows an equitable contribution rate over time (tied also to the evolving system value). This metric will be particularly helpful to observe impacts from various shaping strategies as certain products may help to improve other metrics (such as debt service coverage by using deferred principal payments) but could put a disproportionate impact on specific revenue requirement years that, in aggregate, may not provide equitable results.

The first chart below shows historical and forecasted cash funding and principal and interest payments on debt, which would be solved with the Debt to Net Plant outcomes of an annual Debt to Net Plant ratio of 56% – 58%. These funding levels tied to the relative Net Plant level would be relative proxy as described above to determine if an equitable amount of cash flows related to the underlying assets has been met or is planned into the future. Once the annual Debt to Net Plant ratio hits a consistent 56% - 58%, the level of total plant maintenance will maintain between a 5% - 7% range. These two metrics will be solved in correlation with one another.



STAFF TO DEVELOP MODELING TOOLS, STRATEGY, AND POLICY/PROCEDURE DOCUMENTS

Much of this work is underway as part of the overall analysis effort.

Codification of approach is desired for consistent results from the overarching financial policy direction and supporting associated procedures to the policy. On the modeling tool front, coordinated efforts between budgeting/forecasting, treasury, debt management, accounting, and capital planning will need to take place to ensure a shared vision on planned strategy. Determining the correct amount of cash contribution toward plant each year to manage to the target leverage range will be paramount (in progress). Cataloging the District's existing debt options, building a tool to model impacts, and to report against stated desired targets is underway. The District has executed some strategic transactions but additional optionality and value exists within the debt portfolio as it stands today combined with future structuring decisions on new debt transactions. The ultimate deliverable should be to develop a multiyear strategy that includes transactions coordinated with the financial forecast and treasury cash flows of the District. This strategy will be informed by the policy and metrics contained here within as intergenerational fairness along with existing core financing policy.

References:

District Financial Statements

Appendix

- A. JLB Issuances
- B. Rating Agency Criteria
- C. APPA Financial and Operating Ratios
- D. Debt Report Summary
- E. Asset Register
- F. Leverage Scenarios
- G. Peer Review Comments

Appendix A

Year	Forecast	Issued Par	Issued Premium	Total Annual Issued Principal	Aggregate Principal Issued
2014		45,500,000	-	45,500,000	45,500,000
2015		34,600,000	3,780,000	38,380,000	83,880,000
2016		30,900,000	4,500,000	35,400,000	119,280,000
2017	130,000,000	112,200,000	17,800,000	130,000,000	249,280,000

District Liquidity Management

Analysis and Recommendation, June 2018



Powering our way of life.

Purpose

Assess the District's needs for unrestricted cash reserves to inform cash balance targets and policy

Agenda

- I. Purposes of Reserves
- II. Risk Assessment – Working Capital (Operating Cash)
- III. Risk Assessment – Catastrophic Demand
- IV. Reserves Levels Recommendation and Outcomes
- V. Priority of Call and Subsequent Replenishment
- VI. Next Steps
- VII. Appendix

01

Reserves: Purpose

Restricted and Unrestricted Liquid Funds

GCPUD – Financial Function

Support the generation, acquisition, and distribution of energy to our customers, maintaining balance through changes and disruptions.

- Seasonal
- Markets – energy and financial
- Regulatory
- Economic
- Damaging events

Therefore, the District maintains reserves of two key types: **Restricted** and **Unrestricted**.

Public Utility District No. 2 of Grant County
 Quarterly Treasurer's Report
 Historical Cash and Investments Summary | Liquidity and Restricted

(\$ in thousands)

Cash & Investments	12/31/2015	3/31/2016	6/30/2016	9/30/2016	12/31/2016	3/31/2017	6/30/2017	9/30/2017	12/31/2017
Liquidity-ES R&C Fund ⁽¹⁾	\$ 123,242.8	\$ 125,282.0	\$ 126,199.0	\$ 127,290.6	\$ 125,820.3	\$ 126,813.2	\$ 127,805.2	\$ 128,510.9	\$ 122,030.7
Liquidity-ES Revenue Fund ^{(2) (4)}	43,017.7	73,525.2	105,193.5	120,708.5	93,310.2	114,933.8	112,107.3	130,326.7	52,113.8
Other DCOH Funds ⁽³⁾	55,638.3	63,671.7	46,758.6	50,749.8	57,803.5	68,918.3	51,466.1	48,138.1	51,182.4
Liquidity and Other DCOH Funds	\$ 221,898.8	\$ 262,479.0	\$ 278,151.1	\$ 298,748.8	\$ 276,934.0	\$ 310,665.2	\$ 291,378.7	\$ 306,975.7	\$ 225,326.9
Restricted-Construction Funds ⁽⁴⁾	131,833.9	111,766.3	138,256.1	108,666.0	107,792.5	74,617.3	57,732.4	64,886.9	137,822.1
Restricted-DS Reserve Funds	59,807.8	59,708.1	60,132.5	60,690.1	61,142.5	61,613.7	62,040.7	62,313.3	54,768.7
Restricted-DS P&I Funds	71,591.4	28,369.5	51,117.9	52,506.0	75,300.0	28,771.5	51,114.2	53,015.3	74,216.2
Restricted-DS CREBs Sinking Funds	41,987.4	39,401.5	47,388.2	44,585.4	52,996.6	50,600.9	58,939.7	55,452.8	63,120.6
Restricted-Habitat Funds	11,732.0	14,562.1	14,164.5	13,809.8	13,386.8	15,659.2	15,473.0	15,348.8	15,211.9
All Restricted Funds	\$ 316,952.5	\$ 253,807.5	\$ 311,059.2	\$ 280,257.3	\$ 310,618.5	\$ 231,262.6	\$ 245,299.9	\$ 251,017.0	\$ 345,139.5
Total	\$ 538,851.3	\$ 516,286.5	\$ 589,210.3	\$ 579,006.1	\$ 587,552.5	\$ 541,927.8	\$ 536,678.5	\$ 557,992.7	\$ 570,466.4

⁽¹⁾ Electric System R&C Fund \$120M + interest earnings. Includes transfer out of \$7.0M for Fiber Capital buildout (Q4, 2017).

⁽²⁾ Electric System Revenue Fund \$35M. Excess funds above liquidity target used for equity financing of PRP capital (Junior Lien Bonds, see Note 4).

⁽³⁾ Other funds used in Days Cash On Hand metric include PRP Revenue, PRP Supplemental R&C, Quincy Chute R&C, Service System, and Customer Deposits.

⁽⁴⁾ Construction funds comprised of bond issues during the above time frame: PRP CREBs \$90.0M (Q4, 2015), PRP JLB's \$38.2M (Q4, 2015), \$35.3M (Q4, 2016), \$25.9M (Q2, 2017) and \$100.0M (Q4, 2017). Electric System \$50.0M (Q2, 2016) and \$50.0M (Q3, 2017). Beginning balances in Construction funds were related to bond issuances dated prior to above time frame.

Unrestricted

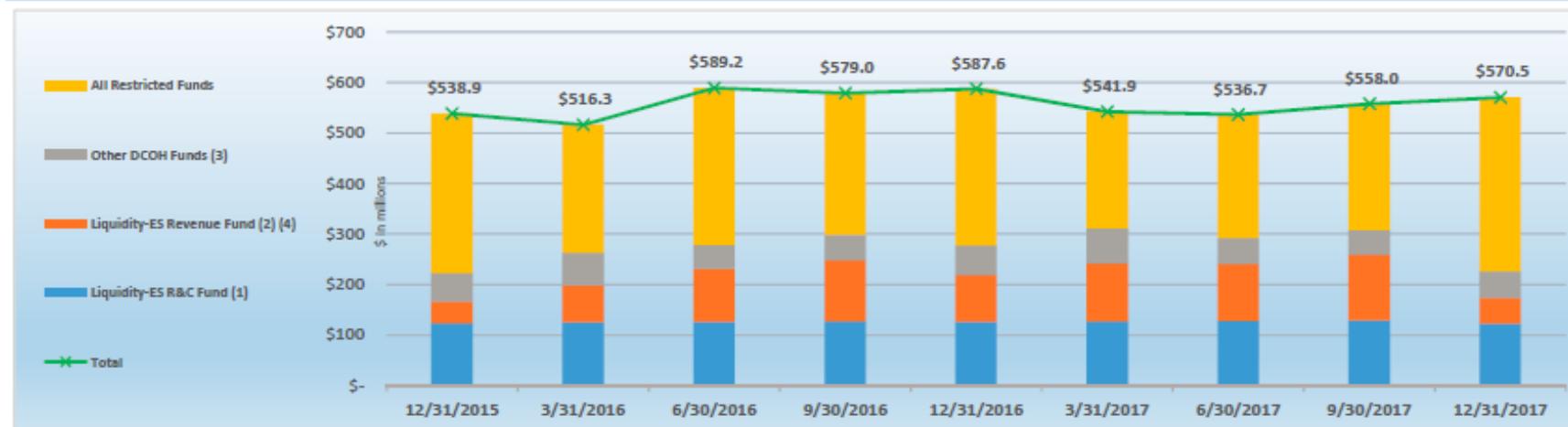
- 1) Primary Operational & Reserve Funds
- 2) Secondary Reserve Funds (Other DCOH Funds)

note: QC & PRP RR&C funds deemed restricted on FS but available for DCOH metric

Restricted

Per contract or bond covenants restricted and not eligible to meet liquidity needs or DCOH metric

*DCOH = days cash on hand metric



02

Analysis

**Working Capital (Operating Cash)
Requirements: Setting the target**

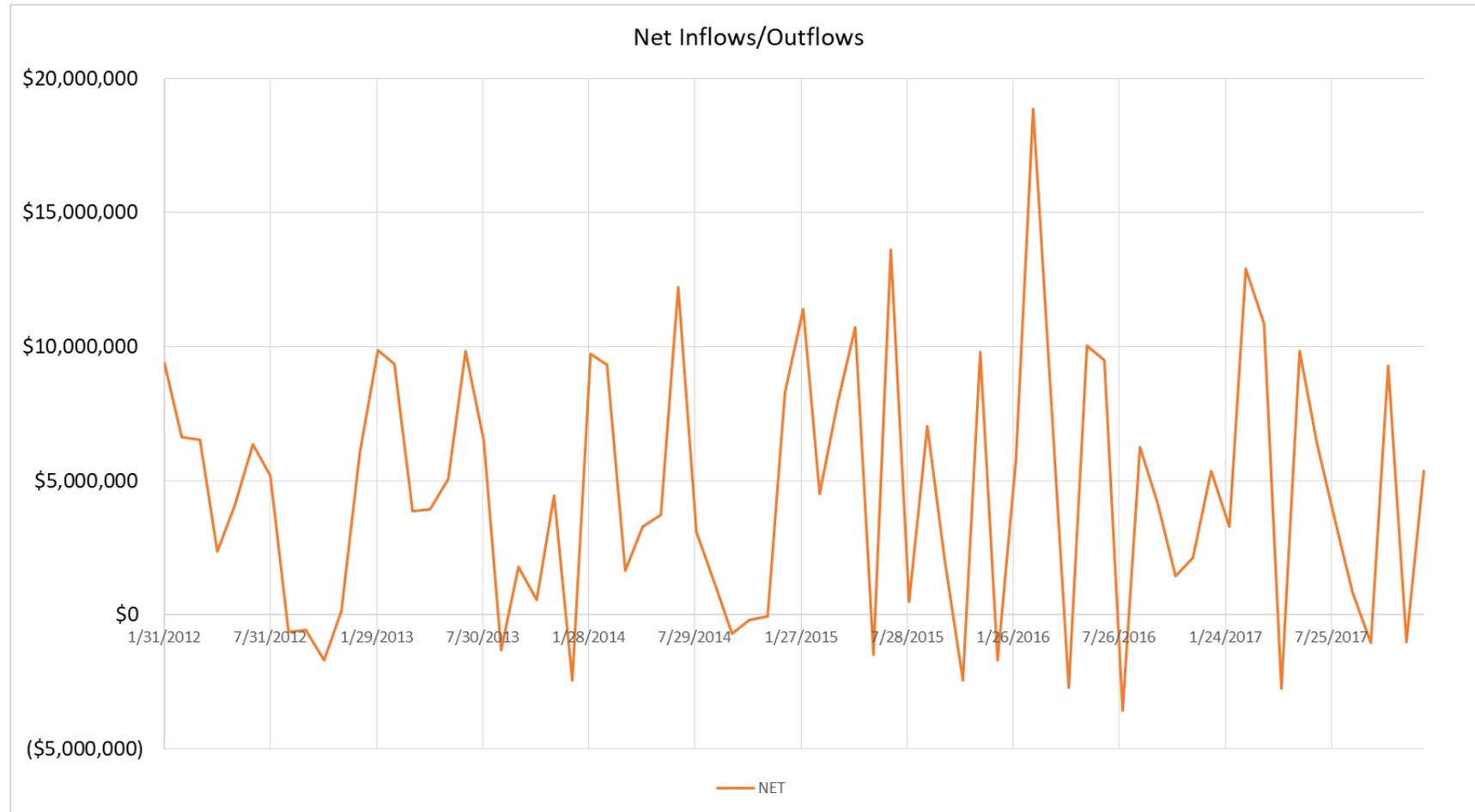
Working Capital (Operating Cash) Assumptions and Approach

Working Capital/Operating Cash – Represents unencumbered cash held within the revenue funds available to the District to fund on-going operational expenditures and provide liquidity during seasonal variability of cash flows. Shock absorber for daily operations and is the “checkbook” for the system.

- Optimize appropriate amount so that no service disruption in paying District expenditures
- Review of historical net cash inflows/outflows by month
- Look to periods that have the greatest net cash outflows to determine minimum operating cash threshold
- In alignment with industry best practices

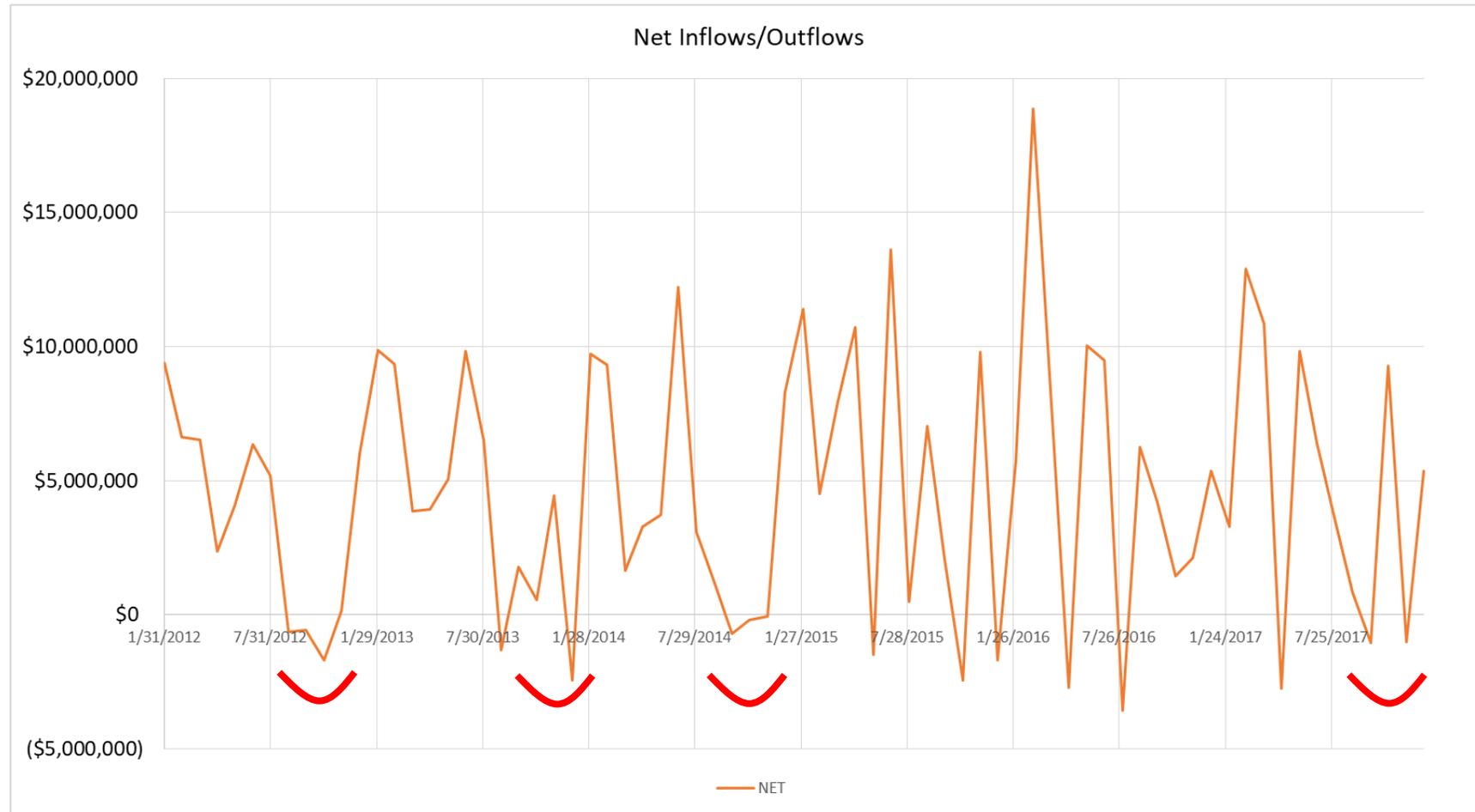
Working Capital (Operating Cash)

- Operational spending balanced against retail and wholesale energy sales
- GCPUD “gets through summer” in a manner consistent with its differing load and generation seasonality
- Operating cash reserves aid float through the more lean income seasons



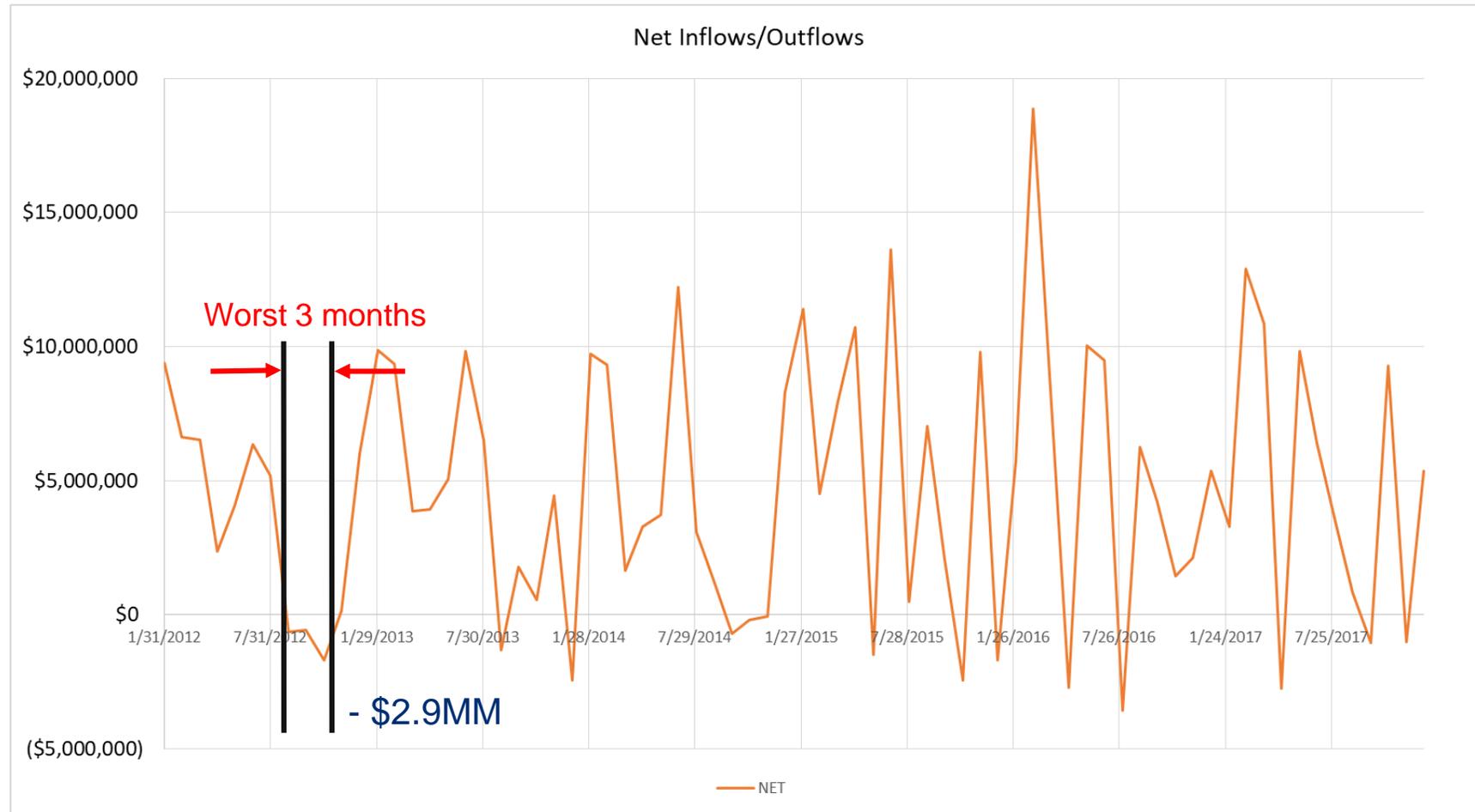
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03

Risk Assessment

**Catastrophe Reserves:
Setting the Target**

Catastrophe Reserves

- The Risk Management performed an District wide risk assessment study in 2017 researching fiscal demand of various calamities
 - *The assessment included serious accidents, catastrophic storms or other one-off occurrences which would harm the District's revenue prospects or create significant financial claims.*
- Sufficient reserves that offset these risks supports the District's financial function
- Predictive anticipatory stress scenarios applied in a matrix calculation method typical for financial stress tests
- Credit Ratings agencies expect and review the levels of these reserves

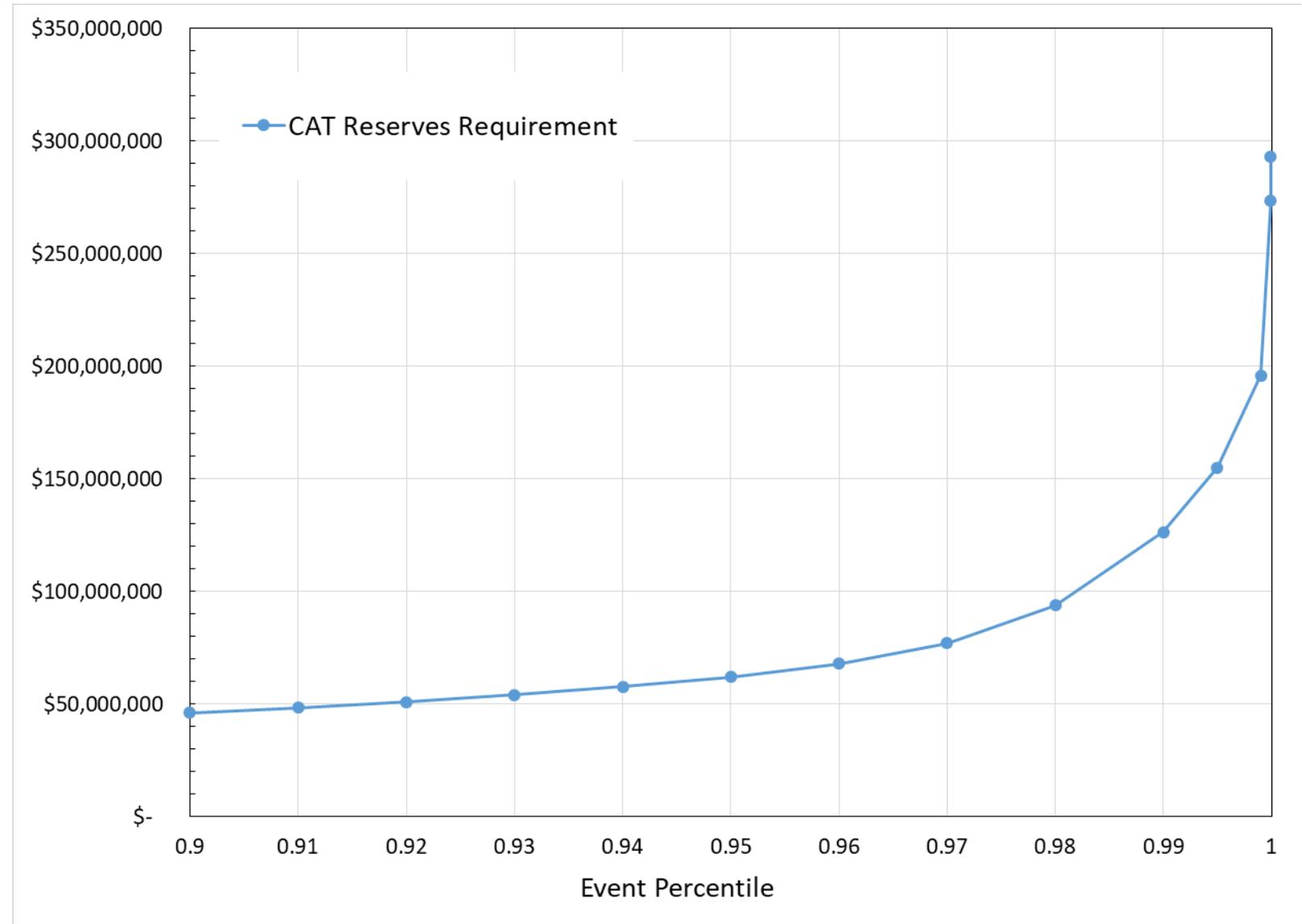
Risk Assessment

ID	Event	Cause	Threat/ Opportunity	Primary Contingency	Cascade Risks												Impact	Annual Probability	Estimated Gross Loss			
					Min	Mode	Max															
1	WSPSP Transaction Counterparty Default	Markets/Economic Conditions	Threat	cash														failure to collect revenue, remarketing of asset, market exposure, potential bankruptcy court liability	2.000%	\$ -	\$ (2,000,000)	\$ (5,000,000)
2	Wholesale: Below Budget	Water	Threat	cash	1													failure to collect revenue, remarketing of asset, market exposure	5.000%	\$ -	\$ (48,000,000)	\$ (82,000,000)
3	Wholesale: Below Budget	Price	Threat	cash	1													failure to collect revenue, remarketing of asset, market exposure	5.000%	\$ -	\$ (9,700,000)	\$ (15,100,000)
4	Wholesale: Above Budget	Water	Opportunity	cash														failure to collect revenue, remarketing of asset, market exposure	5.000%	\$ -	\$ 24,000,000	\$ 36,000,000
5	Wholesale: Above Budget	Price	Opportunity	cash														failure to collect revenue, remarketing of asset, market exposure	5.000%	\$ -	\$ 9,700,000	\$ 21,500,000
6	Bond Covenants Trigger	Events	Threat	cash	7													District actions or behavior cause compliance failure on one or more series of debt	0.050%	\$ (1,000,000)	\$ (15,000,000)	\$ (150,000,000)
7	Large Customer Load Reduction	Migration /Catastrophe	Threat	cash	6	4	5											Avg: 15 MVA for 5 years Max: 150 MVA for 5 years	5.000%	\$ (1,000,000)	\$ (50,000,000)	\$ (200,000,000)
8	Retail Customer Non Payments	Econ downturn	Threat	cash	7													Decreased revenue is per year: Avg: 3 MVA Max: 10 MVA	1.000%	\$ -	\$ (1,434,450)	\$ (4,781,500)
9	Major Earthquake damage to powerhouse(s)/dams	Seismic	Threat	cash	13	14	15	16										Major earthquake damage to GCPUDs generating facilities are highly improbable. If major damage were to occur, loss of generation and major repair expense would result.	0.010%	\$ (500,000)	\$ (1,000,000)	\$ (5,000,000,000)
10	Seismic Remediation Requirement	Regulatory	Threat	cash	7													Min: Analysis only Average: amount of PR right bank Max: Wan left embankment worst case	4.000%	\$ (200,000)	\$ (25,000,000)	\$ (200,000,000)
11	Wind Storm Major	Weather	Threat	cash	13	14	15	16	31	6	7	20						Avg: Loss of 1 mile of transmission Max: Loss of 3 miles of transmission (wheeler Rd. event)	5.000%	\$ -	\$ (1,000,000)	\$ (3,000,000)
12	Ice Storm Major	Weather	Threat	cash	13	14	15	16	31	6	7	20						Avg: Loss of 1 mile of D-Line Max: Loss of 10 miles of T-line	0.100%	\$ -	\$ (50,000)	\$ (10,000,000)
13	Fire in High Voltage	Accident	Threat	cash														Avg: Loss of auto-transformer Max: Loss of switching station	5.000%	\$ -	\$ (600,000)	\$ (3,000,000)
14	Minor Fire in Powerhouse (non generator)	Accident	Threat	cash														Worst case: loss of entire powerhouse; Best case: evacuate powerhouse and cleanup w/o loss of gen	2.000%	\$ (50,000)	\$ (250,000)	\$ (6,500,000)
15	Major Fire in Powerhouse	Accident	Threat	cash	1													Loss of part of all of powerhouse roof, oil heads, generators, control wiring and ancillary equipment	0.100%	\$ (6,500,000)	\$ (50,000,000)	\$ (140,000,000)
16	Fire in Generation	Accident	Threat	cash	1													Impact: Loss of 1 generating unit; Have had two incidents in 50 years (small impact)	4.000%	\$ (50,000)	\$ (500,000)	\$ (17,000,000)

- Regional and internal risk exercise developed 69 potential catastrophes – whittled down to 29 large contributors outside ordinary course of business
- Maximum, minimum, mode, distribution shape and annual probability estimated for each, as well as potential correlation with other calamities
- Multiple events permitted and even encouraged with cross-correlation factors

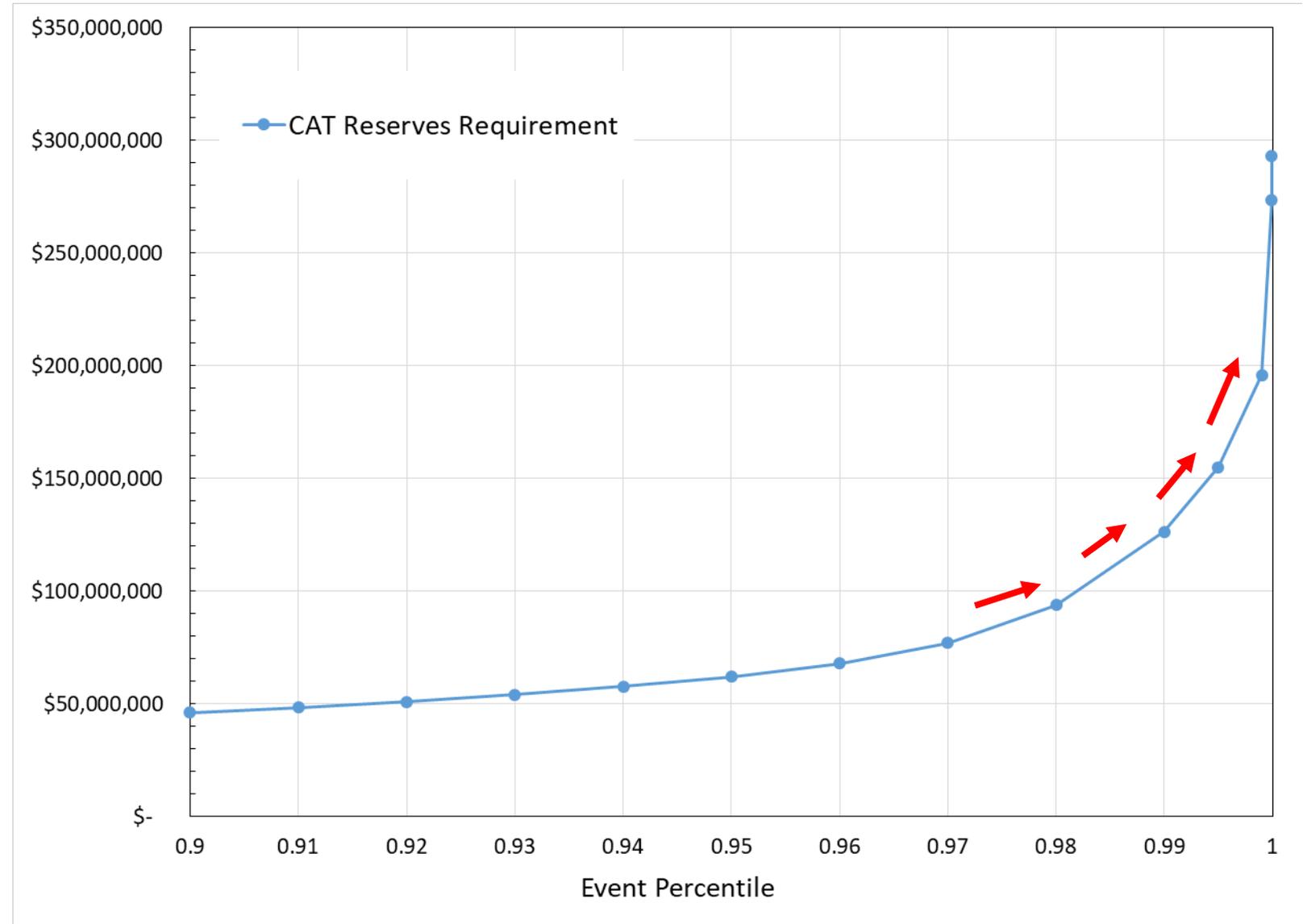
Risk Assessment

- Curvature defines marginal efficiency of reserves
- Maximum demand calculated over \$1.3bn



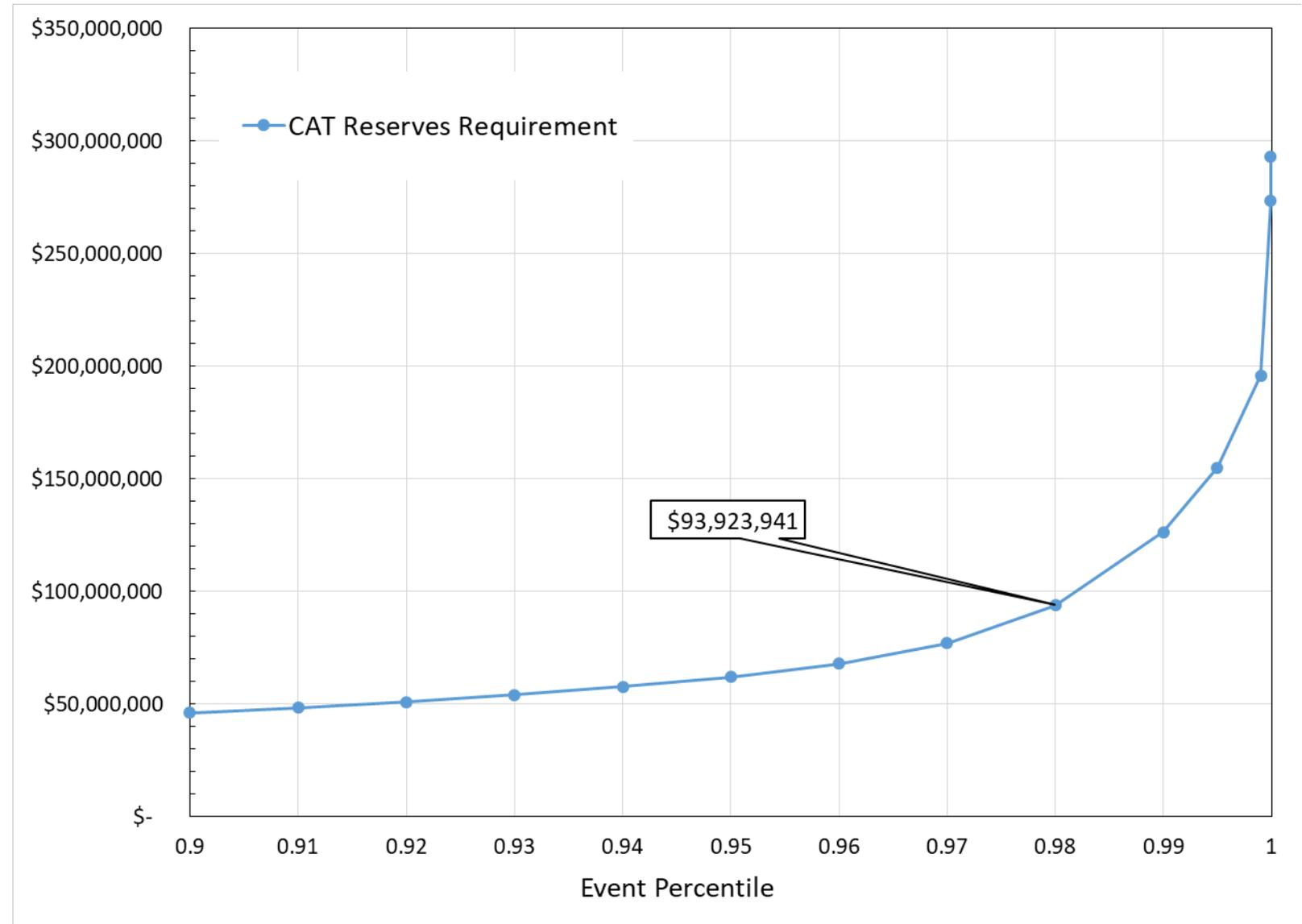
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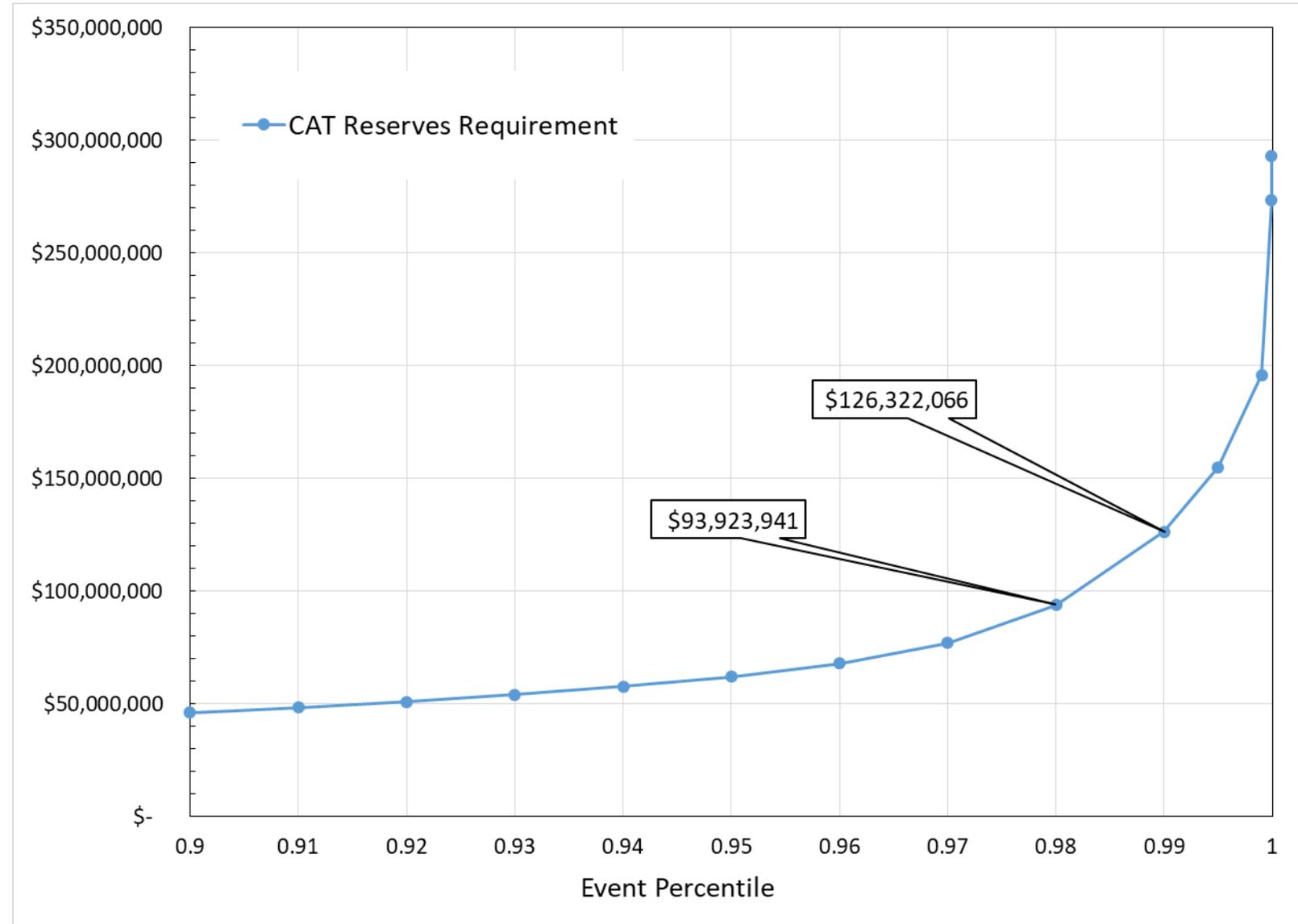
Risk Assessment

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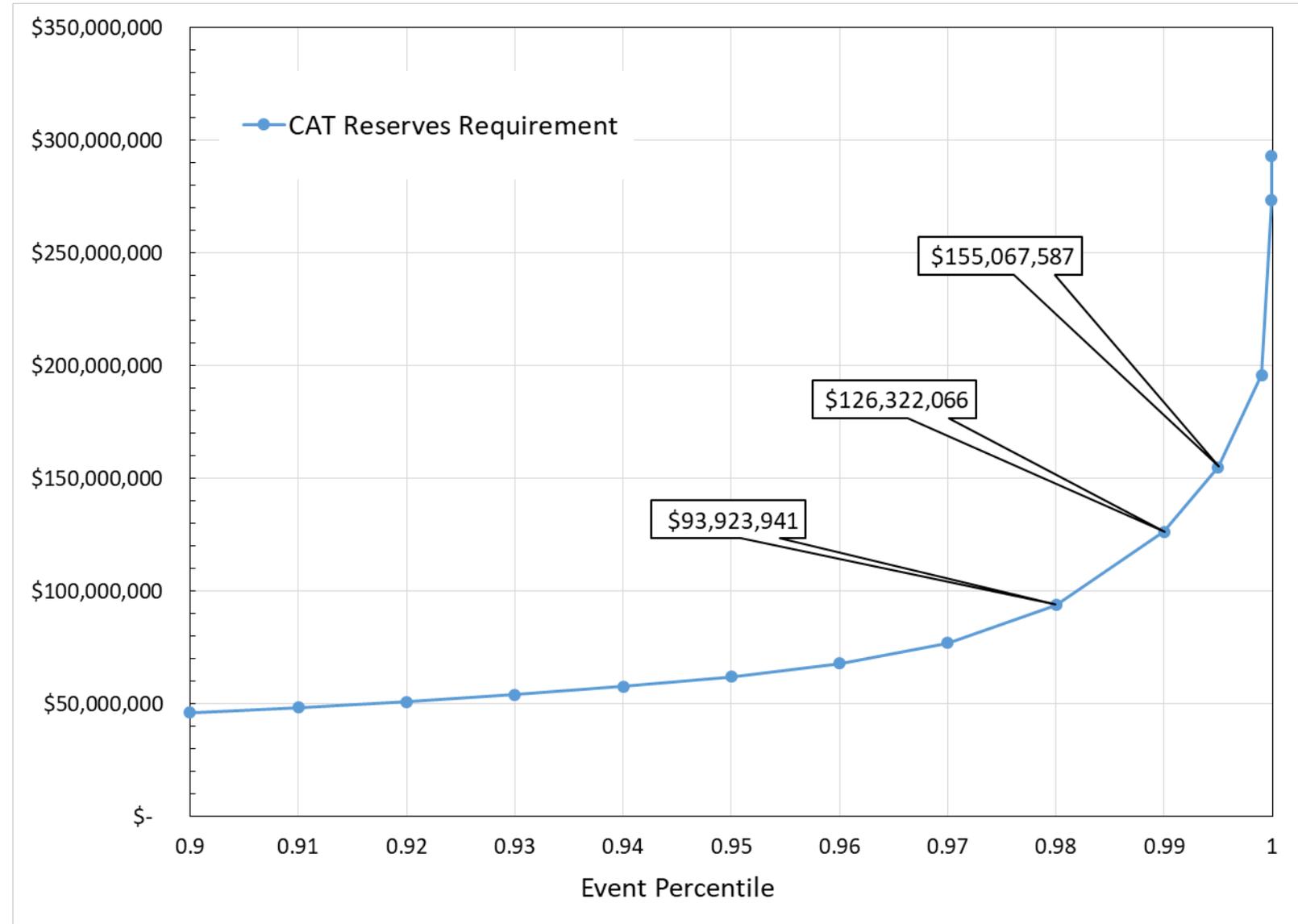
Risk Assessment

- Curvature defines marginal efficiency of reserves
- Maximum demand calculated over \$1.3bn
- \$126MM represents 99th percentile of 100,000 simulations



Risk Assessment

- Curvature defines marginal efficiency of reserves
- Maximum demand calculated over \$1.3bn
- \$126MM represents 99th percentile of 100,000 simulations



04

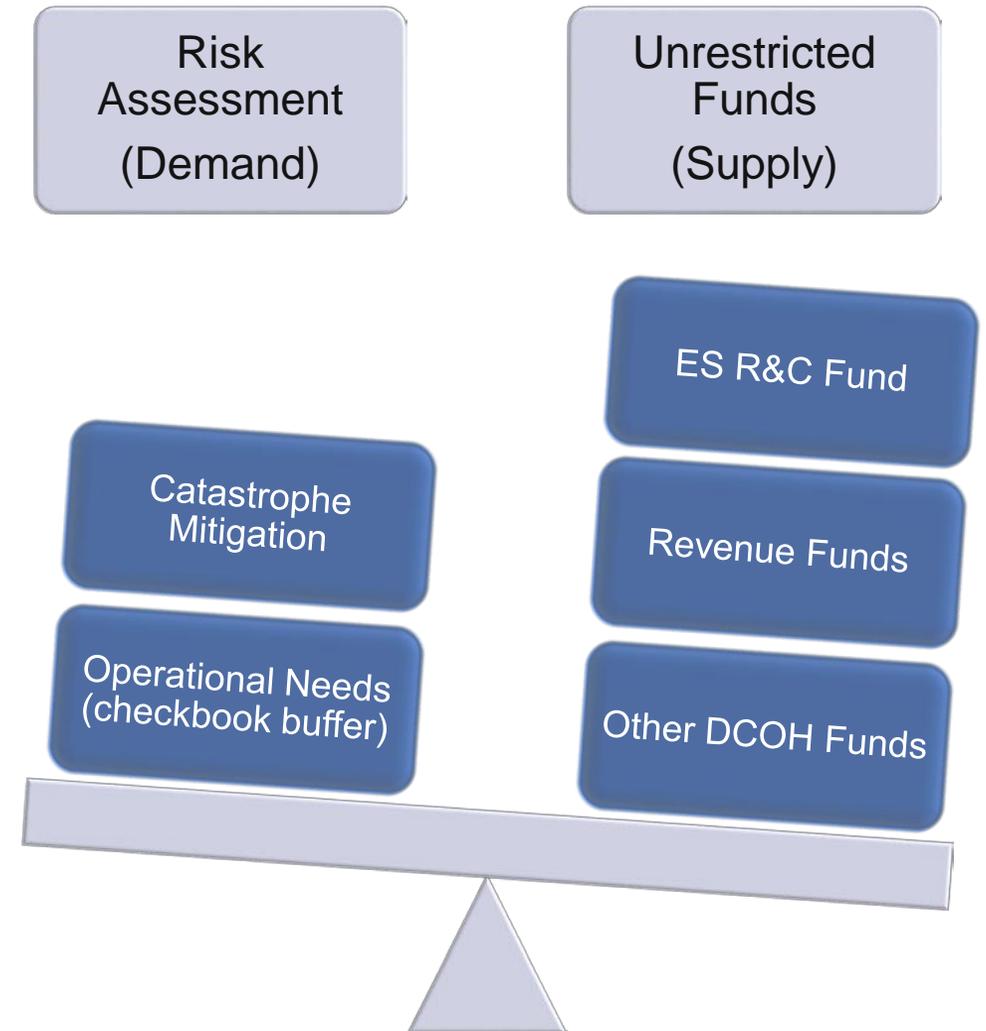
Unrestricted Cash Reserves

Recommendation and Outcomes

Goal and Approach

To balance or right-size the District's **Unrestricted Cash Reserves** to an appropriate and prudent level that's in alignment with the **Risk Assessment** outcomes including catastrophe mitigation and day-to-day operational cash needs. Twofold approach:

1. Review various levels of Risk Assessment potential outcomes. Recommend a prudent level.
2. Review available reserves of Unrestricted Funds for a right-sizing measurement against #1 above. Recommend adjusting fund targets/balances to align with #1 above.



District Funds

- As of 12/31/17 the District managed 33 discrete funds
- Each fund has its own purpose and rolls into two main categories
 - Unrestricted – deemed “liquid” per accounting standards and/or rating agency methodologies
 - As of 12/31 \$225.4 million
 - Restricted - not deemed as “liquid” per contractual or bond covenant restrictions that exclude these funds from operational use
 - Not included in rating agency methodologies
 - As of 12/31 \$345.1 million

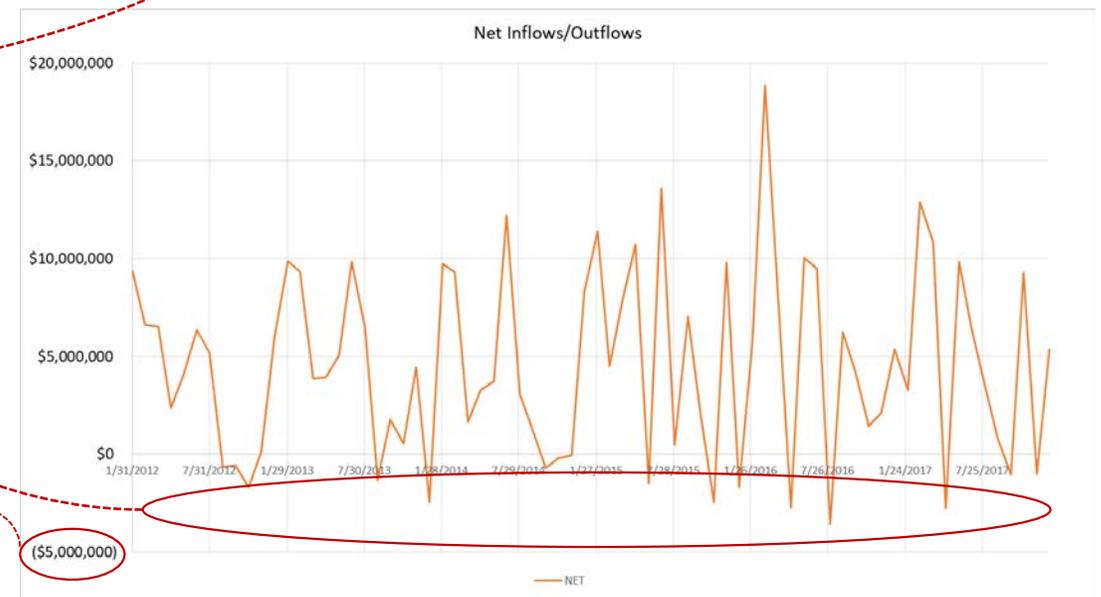
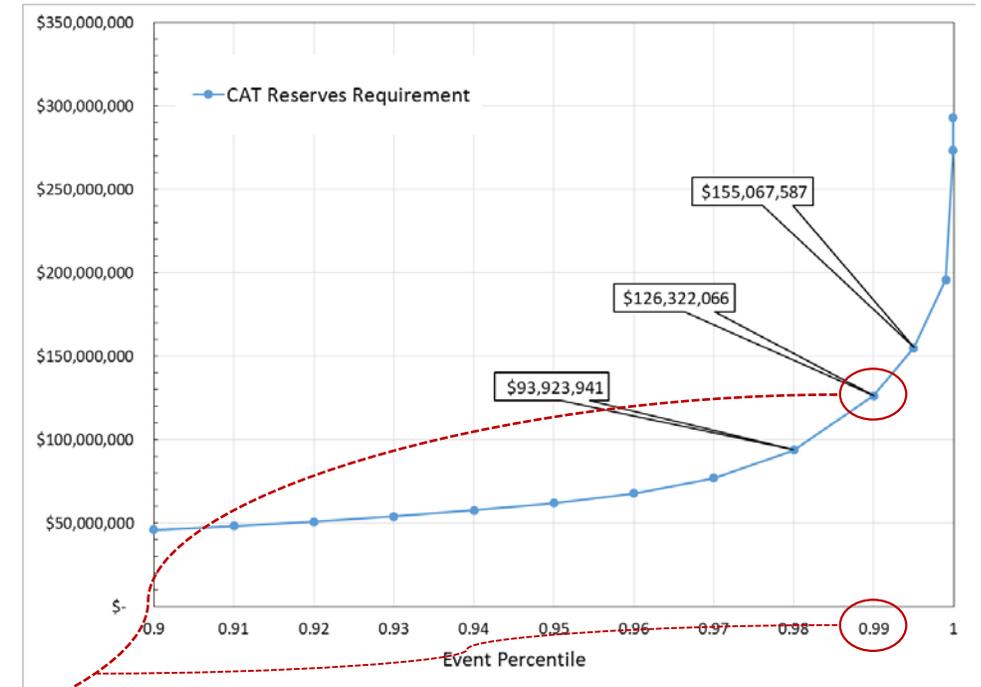
Demand Recommendation

To set liquidity supply targets sufficient to cover the risk assessed demand **at the 99.0% level** AND an **adequate adder** for day-to-day operational working capital (operating cash).

Catastrophe Coverage \$126.0M

Operating Cash Adder \$ 5.0M

Total Demand \$131.0M



Supply Sources Review

(\$ in thousands)

In measuring and right-sizing the Unrestricted Fund balances against the Demand Recommendation, individual funds therein were reviewed for appropriateness and prudence for inclusion or exclusion of the overall measurement.

All District Funds (As of December 31, 2017)	Source Supply	Excluded	Total	Notes
Catastrophe Reserves Supply				
ES Reserve & Contingency	122,031		122,031	May be utilized for catastrophe with board resolution.
PRP RR&C	12,462		12,462	For any PRP bond fund deficiency or utilization for PRP catastrophe with board res.
Operational Reserves Supply				
ES Revenue-Operating Cash Rsv	35,000		35,000	Cushion for ES operational ebbs and flows of revenues and expenditures.
PRP Revenue-Operating Cash Rsv	4,500		4,500	Cushion for PRP operational ebbs and flows of revenues and expenditures.
Amt > Operating Cash-Timing				
ES Revenue - Excess		17,114	17,114	Timing - scheduled for capital transfer.
PRP Revenue - Excess		6,023	6,023	Timing - trued up with Power Purchasers annually in April as part of power cost.
Other Funds				
SS Insurance Reserve	1,047		1,047	Funded through revenue funds. Recommend fund to be dissolved in 2018.
SS Operating	10,000	859	10,859	Supply source capped at \$10M. A/P & P/R payments in transit and monies held for employee accrued benefits.
ES Quincy Chute R&C		1,495	1,495	Externally constrained (CB Hydropower) for QC small hydro project only.
ES Fiber Construction		6,992	6,992	Board designated for ES Fiber capital buildout.
ES Customer Deposits		14,796	14,796	Externally constrained as wholesale and retail customer funds held as account deposits.
Habitat Funds		15,212	15,212	Externally constrained to Priest Rapids Coordinating Committee (PRCC) specific use.
Debt Service Reserve Funds		54,769	54,769	Externally constrained (bondholders) per bond covenants.
Debt Service Sinking Funds		137,337	137,337	Externally constrained (bondholders) per bond covenants.
Construction Funds		130,830	130,830	Externally constrained (bondholders) per bond covenants.
Total	185,040	385,426	570,466	

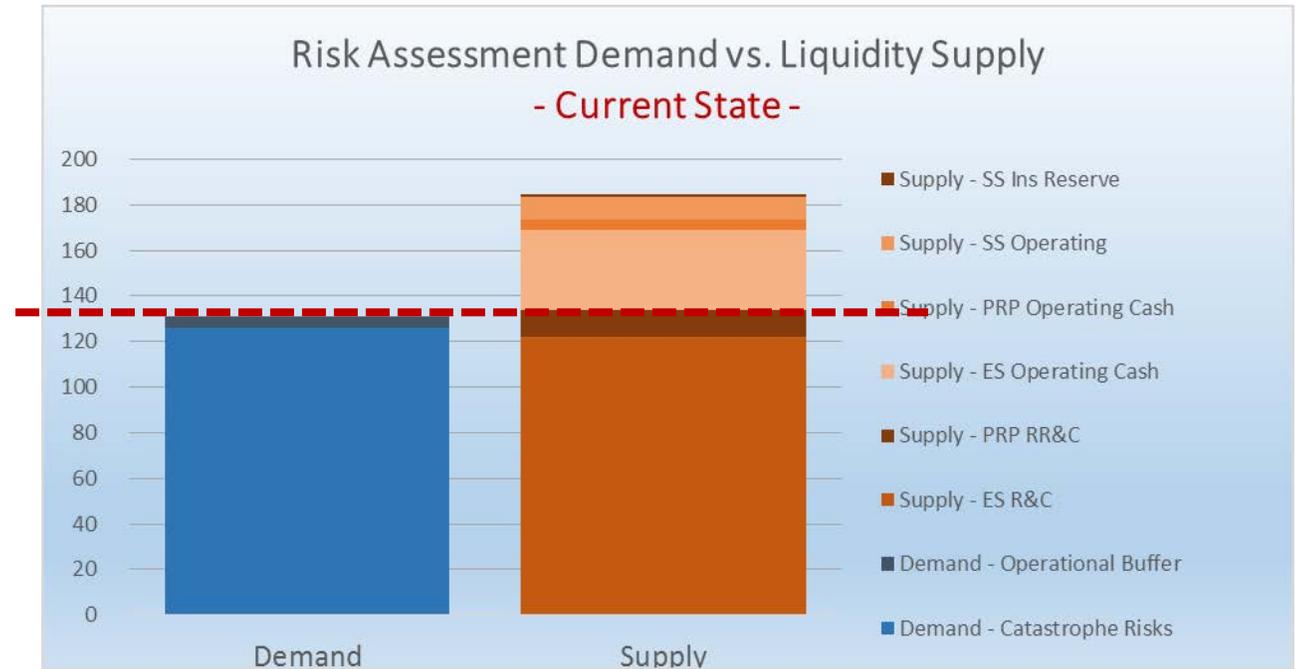
As a result, \$185.0M of the District's Unrestricted Funds as of 12/31/17 was deemed prudent to be measured against the Demand Recommendation.

Risk Demand vs Liquidity Supply

- Current State -

(\$ in thousands)

	Risk Demand	Source Supply
Reserves Demand		
Demand - Catastrophe Risks	126,000	
Demand - Operational Buffer	5,000	
Catastrophe Reserves Supply		
ES Reserve & Contingency		122,031
PRP RR&C		12,000
Operational Reserves Supply		
ES Revenue-Operating Cash Rsv		35,000
PRP Revenue-Operating Cash Rsv		4,500
Other Funds		
SS Insurance Reserve		1,047
SS Operating		10,000
Total	131,000	184,578



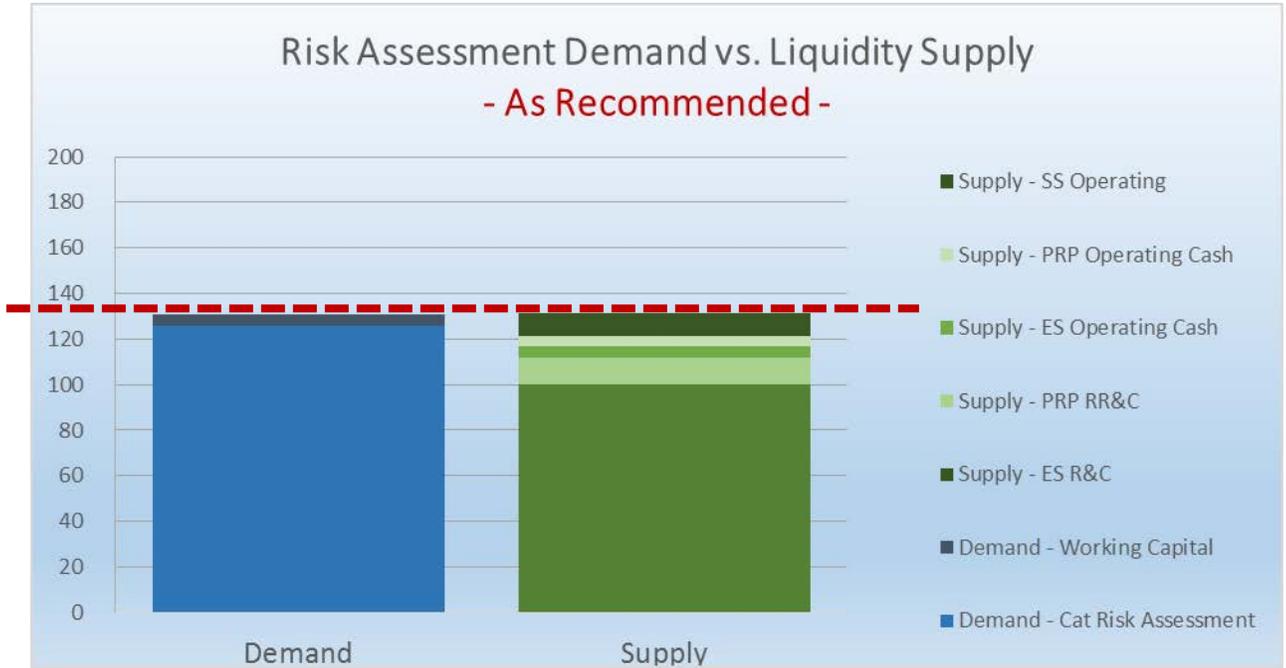
When the Risk Demand is compared to the Liquidity Supply, the District has in excess of \$54.0M. Management recommends balancing it's reserves to an adequate level to meet the overall enterprise risk of the District. In doing so, management also recommends right-sizing it's operational cash position.

Risk Demand vs Liquidity Supply

- Recommended State -

(\$ in thousands)

	Risk Demand	Unadjusted Source Supply	Excess Supply	Adjusted Source Supply
Reserves Demand				
Demand - Cat Risk Assessment	126,000			
Demand - Working Capital	5,000			
Catastrophe Reserves Supply				
ES Reserve & Contingency		122,031	(22,031)	100,000
PRP Renewal, Replacement & Contingency		12,000	0	12,000
Operational Reserves Supply				
ES Revenue - operating cash		35,000	(30,000)	5,000
PRP Revenue - operating cash		4,500	0	4,500
Other Funds				
SS Operating		10,000	0	10,000
SS Insurance Reserve		1,047	(1,047)	0
Total	131,000	184,578	(53,078)	131,500



As an outcome of the recommendation, the targeted balances in the Electric System R&C and Revenue funds would be reduced by \$22.0M and \$30.0M, respectively. In addition, the District's Self-Insurance Reserve Fund would be dissolved (\$1.0M) as sufficient cash resides in the revenue funds to cover District claims.

Outcome – Updated Liquidity Targets

- A key financial metric for the District is the Electric System's Liquidity targets; Revenue Fund and the Reserve & Contingency Fund.
- As an outcome of this study and recommendation, the combined target would be reduced by \$50.0M, collectively.

Fund:	Previous Target	Updated Target	Change
ES Revenue Fund	\$ 35.0	\$ 5.0	\$ (30.0)
ES R&C Fund	\$ 120.0	\$ 100.0	\$ (20.0)
Total ES Liquidity	\$ 155.0	\$ 105.0	\$ (50.0)



Reducing the ES Revenue Fund to \$5.0M aligns to an adequate cushion to meet the day-to-day operational cash needs of the Electric System.



Reducing the ES R&C Fund to \$100.0M maintains sufficient coverage, in conjunction with other sources, to manage overall enterprise risks of the District.

Outcome – Days Cash on Hand Metric

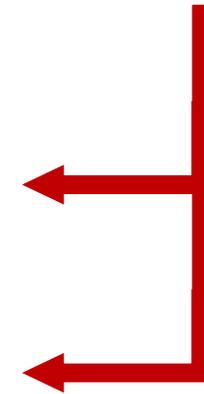
- Days Cash on Hand (DCOH) Key Financial Metric: Target \geq 250 days (Aaa - Moody's criteria)

*DCOH Calculation: DCOH Cash and Investments * 365 days / Annual Operating Expenses (excluding Depreciation Expense)*

(\$ in thousands)

- As Recommended -	Actual (Adj) 2017	Forecast 2018	Forecast 2019	Forecast 2020	Forecast 2021	Forecast 2022	Forecast 2023	Forecast 2024	Forecast 2025	Forecast 2026	Forecast 2027
Cash/Investments (DCOH funds):											
ES Revenue Fund - Operating Cash	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
ES R&C Fund ⁽¹⁾	122,031	123,988	106,386	109,781	112,598	115,550	118,526	121,578	124,709	127,920	131,215
PRP Revenue Fund - Operating Cash	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
Other DCOH Funds ⁽²⁾	64,227	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000
Total Cash/Investments (DCOH funds)	195,758	155,488	137,886	141,281	144,098	147,050	150,026	153,078	156,209	159,420	162,715
Operating Expenses less Depreciation	132,607	132,038	139,817	146,650	216,132	201,882	209,569	223,486	233,683	247,007	253,605
Reduction in Working Capital	(30,000)	(50,161)	(69,724)	(68,320)	(67,527)	(66,631)	(65,744)	(64,814)	(63,839)	(62,818)	(61,749)
Days Cash On Hand > 250	539	430	360	352	243	266	261	250	244	236	234
Reduction in DCOH	-83	-157	-230	-241	-169	-165	-162	-151	-146	-138	-129
DCOH Metric Satisfied	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No

With reducing overall DCOH by \$53.0M, District still within range of its targeted DCOH metric



⁽¹⁾ Assumes investment earnings at 2.75%.

⁽²⁾ PRP RR&C fund and SS Operating fund minimum balances of \$12M and \$10M, respectively.

05

Calamity Event

**Priority of Call and
Subsequent Replenishment**

Priority of Call

- In the event of calamity event(s) that would draw down liquidity beyond a normal refill in the year from net income, a priority of fund drawdown and replenishment is being recommended
- Priority order in how funds will be accessed is based on the nature/location of the calamity event(s) and available fund balances
 - By nature: O&M vs. Capital
 - By location: Electric System vs. Priest Rapids Project

Priority of Operational Reserves Call for a Calamity Event - Electric System

Electric System calamity event(s):

If O&M related, Treasurer reviews capacity in ES Revenue Fund. If Capital related, Treasurer reviews excess capacity in the ES Construction fund.

If insufficient coverage from above then calls upon (in order):

1. Primary Sources:

1. ES Working Capital

2. ES R&C Fund

Specific R&C fund subaccount fund would be determined by best outcome scenario based on key financial metrics with approval by board.

2. Secondary Sources: So long as replenishment is made within 120 days, non interest bearing

1. SS Operating Fund

2. Customer Deposits Fund

3. Additional Sources: To be repaid within 120 days and may require interest to be paid and additional requirements due to state law and bond covenants

1. PRP Revenue Fund

2. ES RF Construction Fund

3. PRP RF Construction Fund

4. ES BF Construction Fund

5. PRP BF Construction Fund

Priority of Operational Reserves Call for a Calamity Event - Priest Rapids Project

Priest Rapids Project calamity event(s):

If O&M related, District may adjust and amend the current year Proforma schedule (largely funded by Elec Rev Fund for our portion but also collected from other purchasers based on remaining share, District share would follow prior page on Electric call, which would likely first access R&C fund if sufficient funds not available in working capital)

If Capital related, Treasurer reviews excess capacity in PRP General Construction Fund. If insufficient coverage then calls upon (in order):

1. Primary Sources (PRP RR&C considered Primary for PRP only):

1. PRP Working Capital	2. PRP Supplemental RR&C Fund	3. ES R&C Fund
------------------------	-------------------------------	----------------

Specific R&C fund subaccount fund would be determined by best outcome scenario based on key financial metrics with approval by board.

2. Secondary Sources: So long as replenishment is made within 120 days, non interest bearing

1. SS Operating Fund	2. Customer Deposits Fund
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3. Additional Sources: To be repaid within 120 days and may require interest to be paid and additional requirements due to state law and bond covenants

1. ES RF Construction Fund	2. ES BF Construction Fund
----------------------------	----------------------------

Replenishment of Reserves Subsequent to a Calamity Event Drawdown

District to recommend a best value option to replenish reserves. Considerations given for sources and timing with the following priorities (in order):

1. Excess Net Revenues

- *Potential replenishment source through lower O&M costs and/or higher revenues collected as compared to adopted annual budget.*

2. Issuance of New Debt

- *Within a reasonable timeframe (typically within 120 days), new debt may be issued so long as the District's targeted financial metrics can be maintained.*
- *Note – O&M special considerations of Revenue bonds*

3. Rate Rider

- *Potential temp or permeant uplift to recover incremental costs – address at time of event*



06 Next Steps

Next Steps

- Finalize approach
- Review with credit ratings agencies and stakeholders
- Review business impacts of reduced reserves on future operations and planning
- Draft policies and connected procedures
- Incorporate into financial planning model



07 Appendix

Appendix – Fund Descriptions

Purpose of Funds- Unrestricted

Electric Revenue Fund (working capital) – All Electric System revenues deposited and O&M/debt service expensed (including monthly PRP contractual power costs). A portion of Electric construction funded (transferred into construction fund).

- Cyclical costs present fluctuations in timing of cash flows
- The primary “checkbook” of the District to absorb costs, steady-state carrying balance should be robust to handle fluctuations

Electric Reserve & Contingency Fund – purpose is to provide reserves beyond daily needs in the event of a calamity and to shore up prudent financial planning needs.

- Board designated with approval needed for District use, deemed “liquid” for accounting and financial purposes
- Historically has been set by analyzing impacts from seasonal power production impacts (poor water years) combined with rating agency criteria

PRP Revenue (working capital) –connected to the long term purchaser contracts and tied to bond covenant flow of funds. Purpose is to receipt revenues and expense payables (O&M/debt service).

- Needs to have a sufficient balance to fund cyclical operations. Each month District and purchasers per contract pay 1/12th of budgeted costs (FY 2018 Grant share is 82% of O&M costs).
- District is responsible for timing fluctuations to make payments regardless of inflows. Note capital expenditures flow thru construction funds (restricted).

Purpose of Funds- Unrestricted/Liquid

Other Liquid/Unrestricted Funds

PRP RR&C– Contractual reserve for the long term power sales contracts

- Tied to bond covenants, purpose is to collect and hold 15% supplemental debt service and carry a minimal balance of \$12 million.
- Can be accessed to pay for debt service costs or temp loaned for qualifying expenditures
- Classified as “restricted” on the financial statements but deemed liquid for rating agency purposes

Quincy Chute Reserve– Contractual reserve for the qualified purpose of expenditures meeting approval process

- Classified as “restricted” on the financial statements but deemed liquid for rating agency purposes

Customer Deposits –Liability of the District due to customers upon demand / qualification of release, invested in shorter duration

Service System – Obligated funds due as a liability to repay short term fund obligations

- Largest obligation is employee post employment obligations payable upon termination of employment

Purpose of Funds- Restricted

Construction Funds– Funds are restricted to qualified capital expenditures

- Funds are designated per a bond issue or internal transfer and designated in some cases for special purposes with accounting governance in place
- IRS, state law, and bond covenants have significant restrictions on use. Deemed as restricted on financial statements and not included in rating agency liquidity calculations due to restrictions.

Debt Service Reserve– Funds required to backstop issued debt

- Restricted per bond covenants and fungible only for specific purposes (final year debt service and recalculated periodically per bonds test)

Debt Service Principal & Interest Due – Funds accrued each month for annual required debt service payments

- Serial and Term bond fixed rate debt significant payments on 1/1 and 7/1 annually, variable debt paid monthly
- Principal due on 1/1 and interest on 1/1 and 7/1. Annual debt service for 2018 (gross of federal rebates) = \$110 million
- Restricted per bond covenants

Debt Service Sinking Funds – Principal payments due on the CREB bullet maturities

- District is required per bond covenants to pay level annual deposits to fund the maturity dates of \$222 million of CREB bonds with tender dates of 2027, 2032, and 2040.
- Balance will grow until final maturities are due and is restricted. Use of sinking funds and CREBs saves District significant debt service but does require funds be managed until maturity. Interest is paid annually on 1/1 and 7/1 with unsequestered rebates being receipted.



Appendix – Rating Agency/ Peer Review

Rating Agency Key Points

FitchRatings

S&P Global

MOODY'S

Bond rating agencies expect that utilities will maintain reserves to hedge against uncertainty and risks. Failure to hold sufficient reserves could impact bond ratings.

- Rating agency methodologies largely focuses on aggregate “liquid” cash and investments, aggregate adjusted days cash on hand calculation, and cash to debt ratio in addition to other financial metrics
- Liquidity is separated from total funds managed by the entity and **excludes** non liquid funds such as:
 - Debt service funds
 - Customer deposits
 - Debt service reserves
 - Bond proceeds
 - Any fund deemed restricted or unavailable in a timely manner
 - Lines of credit
- Days cash calculations focus on operational expenditures in relation to cash (note accounting treatment of wholesale power skews this calculation).
 - Moody’s target > 250 days, S&P target > 270 days, Fitch Target > 240 combined (implied)

Peer Review

- Reviewed peer entity approach on overall funds management
- Most approaches reference rating agency requirements and published peer liquidity/days cash results as a total target
- Most liquidity management programs tie to published financial policy and some tie to automatic rate riders and/or connected government transfers
- Use of a risk assessment is common to determine a reserves target
- Individual fund management included in approach internally, externally focused is targeted on aggregate liquidity levels
- Vertically integrated utilities with contracts containing fund and accounting provisions (like Grant) may impact how funds and total targets are managed

Peer Review

Fitch Ratings US Public Power Peer Review				
2016 data, published June 19, 2017. Report Excerpt, select AA (+/-) utilities				
	Entity	Days Cash on Hand	Debt / Elec Customers	DSC
AA+	Chelan Co PUD	562	11,883	3.26
AA+	CPS Energy *	280	7,783	2.52
AA	Colorado Springs *	220	10,829	1.72
AA	JEA *	309	5,621	2.48
AA	OUC*	568	8,115	2.09
AA	Grant Co PUD	*764	29,590	2.13
AA-	SMUD*	250	4,125	2.32
AA-	Snohomish	227	1,681	1.90
AA-	Tacoma Power *	240	2,660	2.84
* City utilities may have general fund transfers/backing to support rating				
** Grant Days Cash calc is impacted from netting of power purchases due to hedging contract				

Rating Agency Report Excerpts

Moody's – 11/2017

- Strong liquidity offsets lower credit weaknesses such as industrial concentration, hydrology/wholesale risk, cost recovery framework, actual debt service coverage, and large capital spending
- Decline in liquidity below \$200 million on a sustained basis noted as a factor that could lead to a downgrade

S&P – 11/2017

- Liquidity and other financial management policies offset concerns on high capital requirements and high debt burden

Fitch – 11/2017

- Days cash results notes as a strong factor in maintaining AA rating offsetting sensitivities of generation/wholesale management and industrial concentration

Appendix – Scenarios

Other Considerations – Demand for Liquidity

(\$ in millions)

Component	1st Approach WC - Tied to Op Ex R&C - No Change	2nd Approach - v1 WC - Need Based R&C - Risk Based - 98.0%	2nd Approach - v2 WC - Need Based R&C - Risk Based - 99.0%	2nd Approach - v3 WC - Need Based R&C - Risk Based 99.5%
Demand Event Percentile	99.50%	98.00%	99.00%	99.50%
Demand - Key Assumptions:	<ul style="list-style-type: none"> - Well served % level of confidence of Risk assessment - Includes water risk (assumes no Shell contract) - No additional operational reserve for working capital ebbs/flows 	<ul style="list-style-type: none"> - Reduced % level of confidence - Risk assessment - Excludes water risk (hedged Shell contract) - Additional operational reserve for working capital ebbs/flows 	<ul style="list-style-type: none"> - Middle % level of confidence of Risk assessment - Excludes water risk (hedged Shell contract) - Additional operational reserve for working capital ebbs/flows 	<ul style="list-style-type: none"> - Well served % level of confidence of Risk assessment - Excludes water risk (hedged Shell contract) - Additional operational reserve for working capital ebbs/flows
Demand - Calamity Risks	\$160.0	\$93.9	\$126.3	\$155.1
Demand - Operational Cash Rsv	\$0.0	\$5.0	\$5.0	\$5.0
Total Reserves Demand	\$160.0	\$98.9	\$131.3	\$160.1

Other Considerations – Liquidity Supply

Component	1st Approach WC - Tied to Op Ex R&C - No Change	2nd Approach - v1 WC - Need Based R&C - Risk Based - 98.0%	2nd Approach - v2 WC - Need Based R&C - Risk Based - 99.0%	2nd Approach - v3 WC - Need Based R&C - Risk Based 99.5%
ES Liquidity Target	> \$160M	> \$72.4M	> \$105M	> \$133.6M
Supply - Calamity Risk Mitigation ES R&C Fund	\$120.0	\$67.4	\$100.0	\$128.6
Supply - Calamity Risk Mitigation PRP RR&C Fund	\$0.0	\$12.0	\$12.0	\$12.0
Supply - Operating Cash ES Revenue Fund	\$12.3	\$5.0	\$5.0	\$5.0
Supply - Operating Cash PRP Revenue Fund	\$23.9	\$4.5	\$4.5	\$4.5
Supply - Operating Cash Service System	\$0.0	\$10.0	\$10.0	\$10.0
Total Reserves Supply	\$156.2	\$98.9	\$131.5	\$160.1
Supply - Key Assumptions:	<ul style="list-style-type: none"> - Revenue funds WC and ES R&C are primary sources for Risk mitigation - (unencumbered) - ES R&C is maintained at current target level - Working capital dynamic and determined at 60 days of annual expenditures (excluding purchased power expense) 	<ul style="list-style-type: none"> - Revenue funds WC and ES R&C are primary sources for Risk mitigation - (unencumbered) - ES R&C equals calamity risk at reduced level - Working capital static and split 50/50 between ES & PRP revenue funds. Need based and reviewed periodically. 	<ul style="list-style-type: none"> - Revenue funds WC and ES R&C are primary sources for Risk mitigation - (unencumbered) - ES R&C equals calamity risk at middle level - Working capital static and split 50/50 between ES & PRP revenue funds. Need based and reviewed periodically. 	<ul style="list-style-type: none"> - Revenue funds WC and ES R&C are primary sources for Risk mitigation - (unencumbered) - ES R&C equals calamity risk at well served level - Working capital static and split 50/50 between ES & PRP revenue funds. Need based and reviewed periodically.
DCOH - All eligible funds (in Days)	497	344	464	507



Powering our way of life.

Debt Program Review

Commission Workshop, November 2018



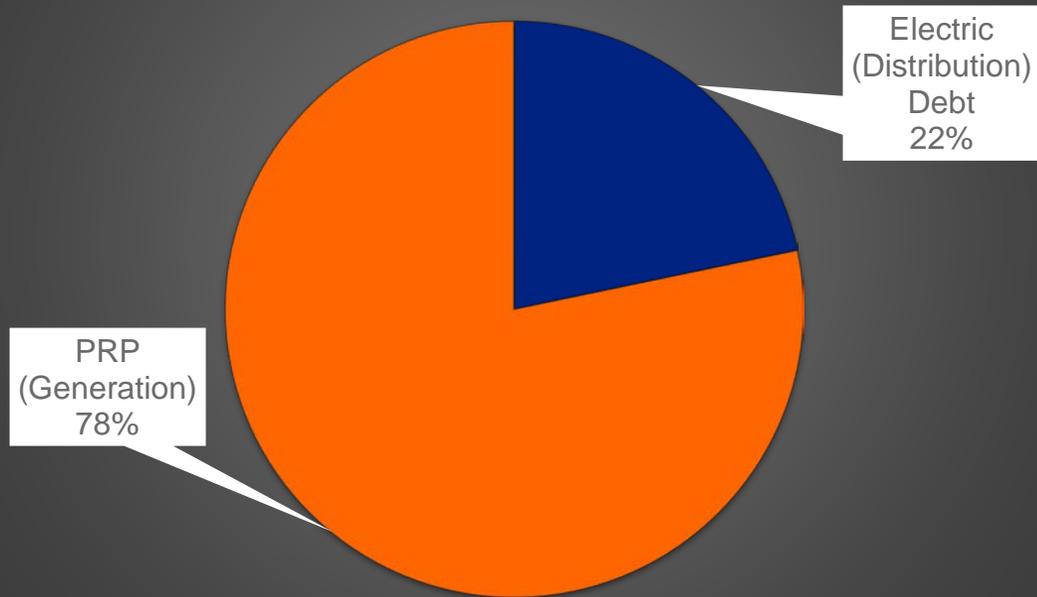
Powering our way of life.

Agenda

- Goals / Desired Outcomes
 - Review debt program
 - Discuss strategies in place and monitoring tools for recommended future programmatic management
 - Receive general concurrence to move forward to next steps of implementing policy and monitoring
- Key Take Aways
 - District seeks to manage according to best practice and industry standards for similar utilities
 - Strategic plan metrics are a significant driving component of strategy
 - Recommendations derive from managing to District stated goals on financial stability, low/predictable rates, application of cost causation

Key Debt Info

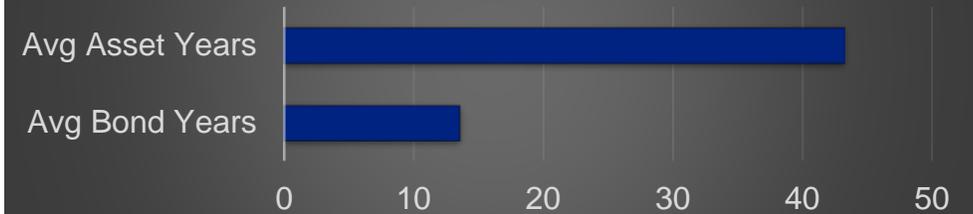
Outstanding Debt- \$1.3 billion (thru 9/30/18)



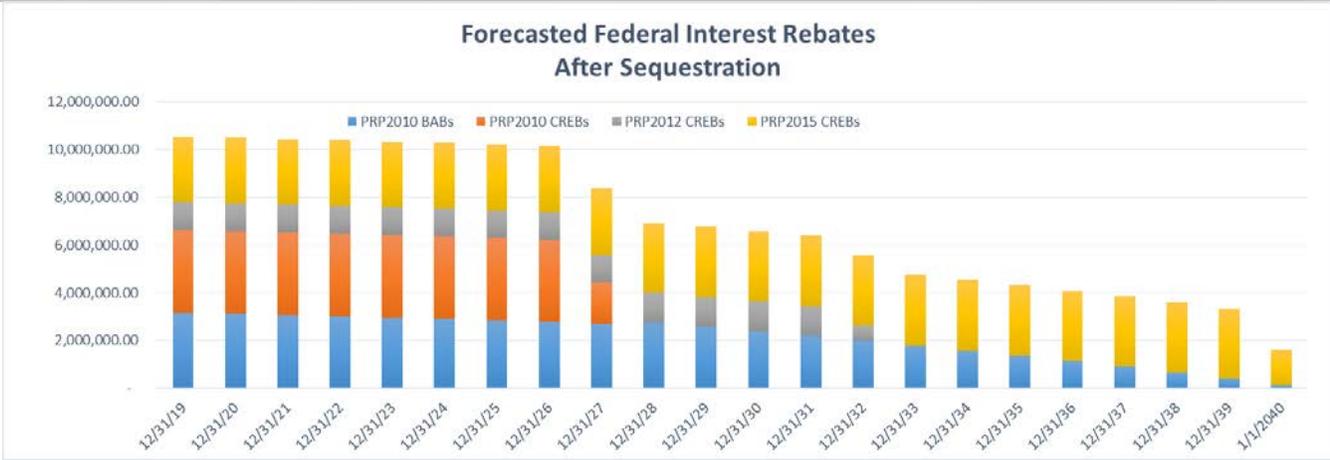
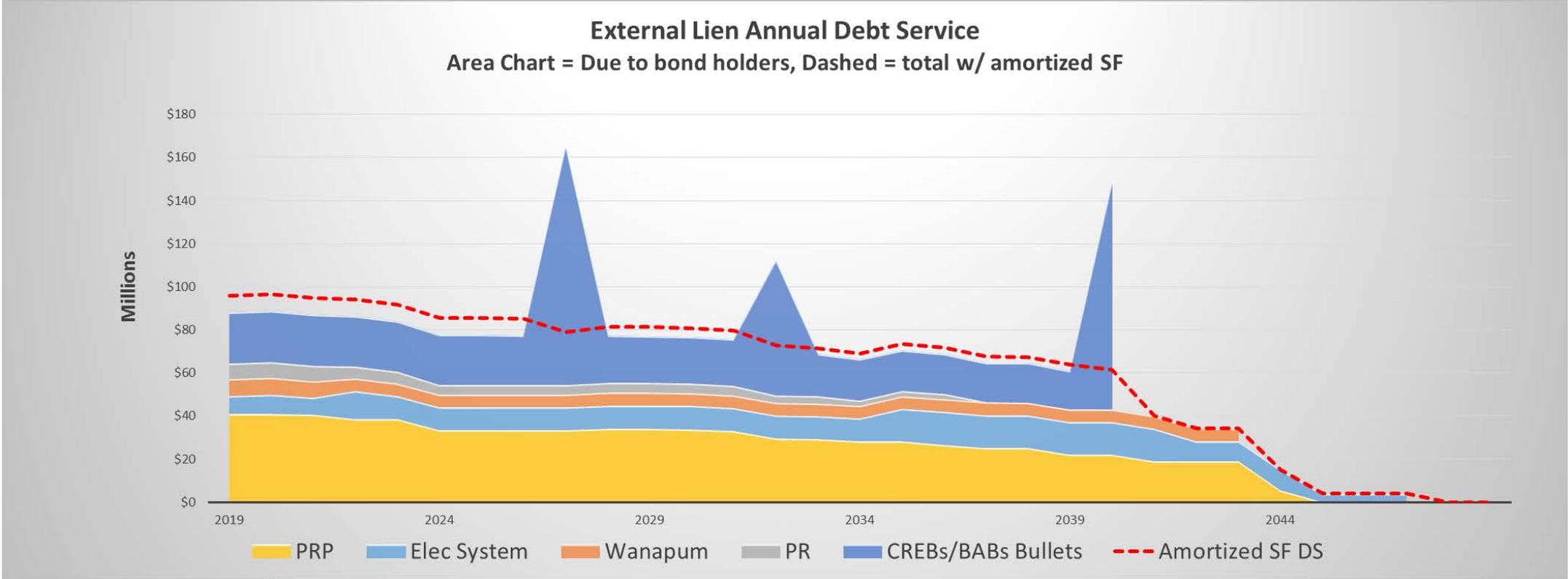
Portfolio Call Options (shown in millions)



Bond/Asset Duration



Key Debt Data Points



Background

- District has analyzed various components of the debt program dating back to 2013 with enhancements being implemented incrementally
- In 2018 a study was conducted focusing on the allocation of debt burden relating to financing capital assets over time
 - This has been referenced internally as “generational fairness”
 - Common utility applications and principles informed recommendations
 - Coordination with existing debt portfolio strategy and District objectives for forward implementation is essential

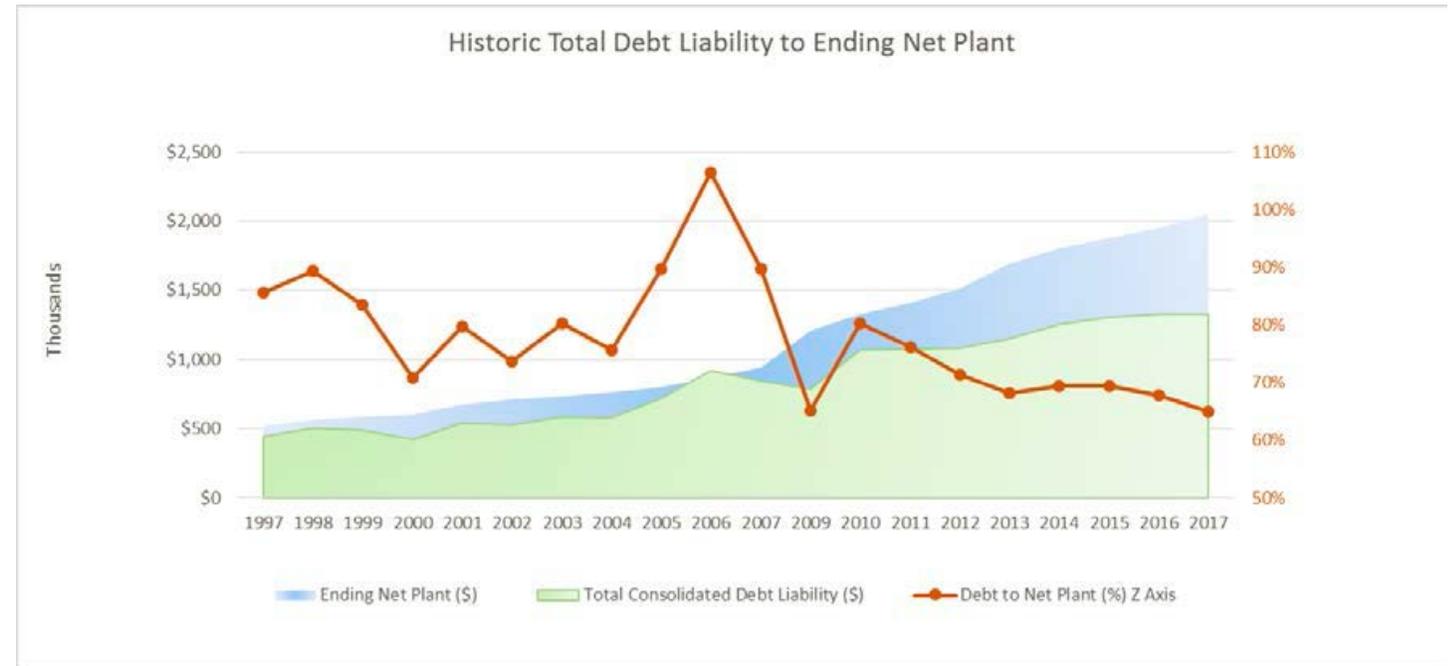
2018 Study

- Industry approaches vary by utility, some common practices used across utility sector for ratio monitoring and funding strategy
- Recommendations are focused to deliver results in key areas of District strategy and objectives
 - Strong financial position/maintaining long term low cost rates are key Strategic Plan objectives and drive outcomes
 - Key supporting SP metrics include: liquidity, return on assets, debt service coverage, debt to net plant, retail operating ratio, and credit rating
 - Cost causation principles are industry standard and drive rate setting
- Key recommendations to be integrated formally into program are:
 - Debt Ratio - how much of plant is debt financed (leverage)
 - Tenure of Debt - matching bond durations to asset lives
 - Cash Flow Timing - cyclic balancing of overall plant funding needs to evaluate total fairness over time

Debt Ratio

*strategy sets the amount of debt to issue

- District's established Strategic Plan Financial Metric (Debt to Net Plant ratio) is a future steady state target not to exceed 60%
- Measures outstanding Debt (principal) in relation to the net book value of Plant
 - book value minus depreciation
- The last 7 years represents an intentional strategy to move toward 60% as a steady state metric (2017 = 65%)
- Current forecast indicates the District will reach the 60% target in 2019 and maintain a band within the next 5 years of 57-60%

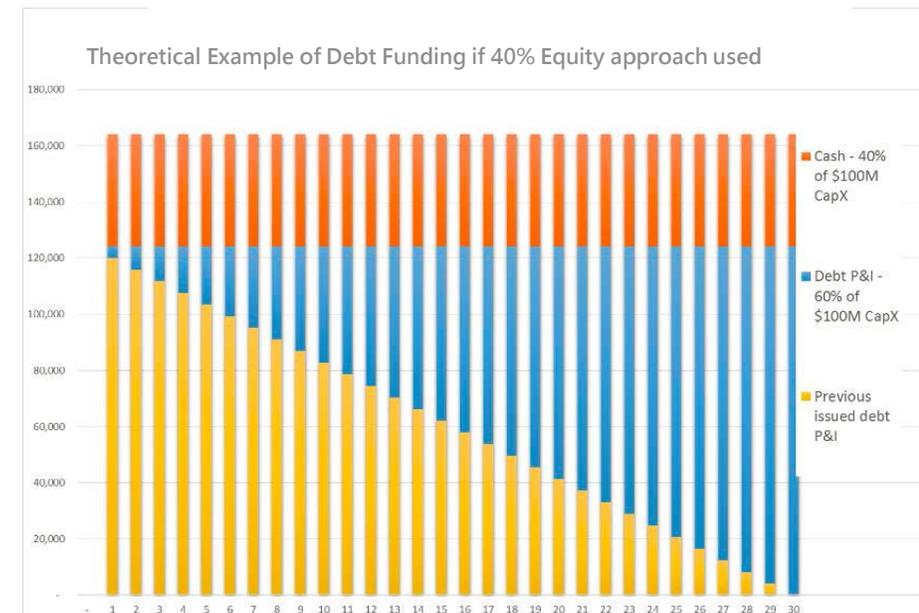
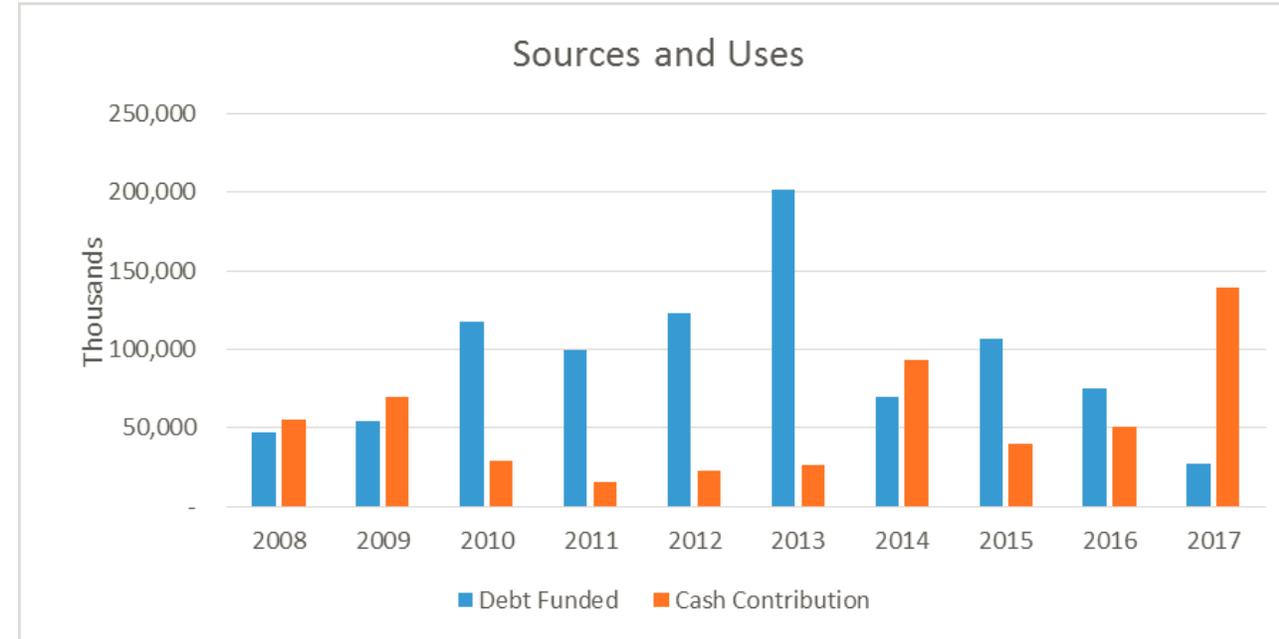


- Utility industry practice for similar positioned organizations focus on leverage / debt ratio metrics with similar targets
 - Application varies based on specific utility need

Debt Ratio....continued

Managing to a consistent debt ratio provides:

- The ability to solve and manage cash/debt needs
 - Budgets and rate revenue requirements have less planned and actual variances
 - Supports strategic plan objectives
-
- **Recommendation: target an allowable band below 60% for planning purposes (56-58%)**
 - **This metric is a primary planning tool to set the amount of debt to issue, additional tools to shape debt to accompany this strategy**
-
- Note: balancing to a year end leverage metric has minor variables outside debt liability factored in such as capital spend timing, plant retirement, and depreciation variances.



Current Capital Finance Plan –

In thousands \$000

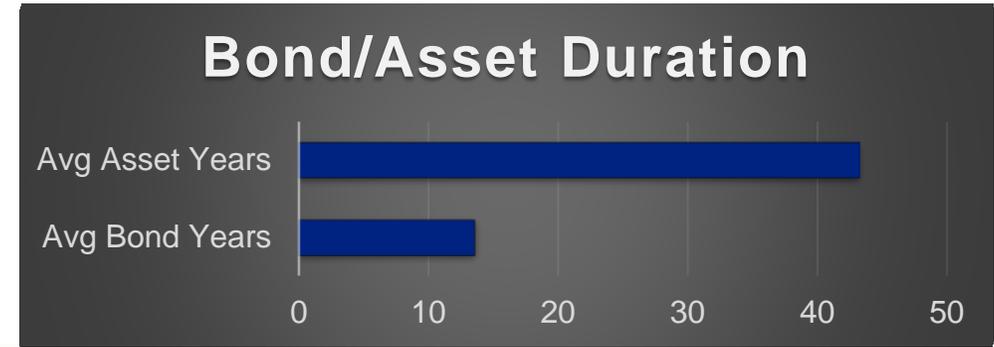
	2018	2019	2020	2021	2022
Total Capital Demand	124,726	141,679	161,206	105,674	115,231
Source: Equity Funding	91,037	108,440	98,439	74,754	80,087
Source: *Debt Funding	33,689	33,239	62,767	30,920	35,144
New Debt as a % of Annual Cap	n/a	23%	38%	29%	30%
Projected EOY DNP %	62%	60%	59%	58%	57%

- Debt funding amounts represent the amount of external funding via debt to supplement capital construction fund needs. 2018 represents the exhaustion of previously issued borrowings. Forward years debt represents new money deposits via externally issued debt (does not take into effect discount/premium, fees, or reserves). Par amount of debt may vary.

Duration- Bond Years/Asset Lives

*Strategy for debt shaping

- Standard financing strategy is to issue debt that corresponds to the asset service life
 - Requirement of each bond issue to demonstrate compliance to IRS regulations for specific transaction
- District current aggregate portfolio ratio is 32%
 - 13.6 average life of existing bonds compared to 43.2 average life of existing booked plant
 - Current ratio driven by historical financing reflective of contracts, regulations, capital needs, and financial strategy decisions
 - Improving this metric has been a strategy driving past 5 year's transactions structure



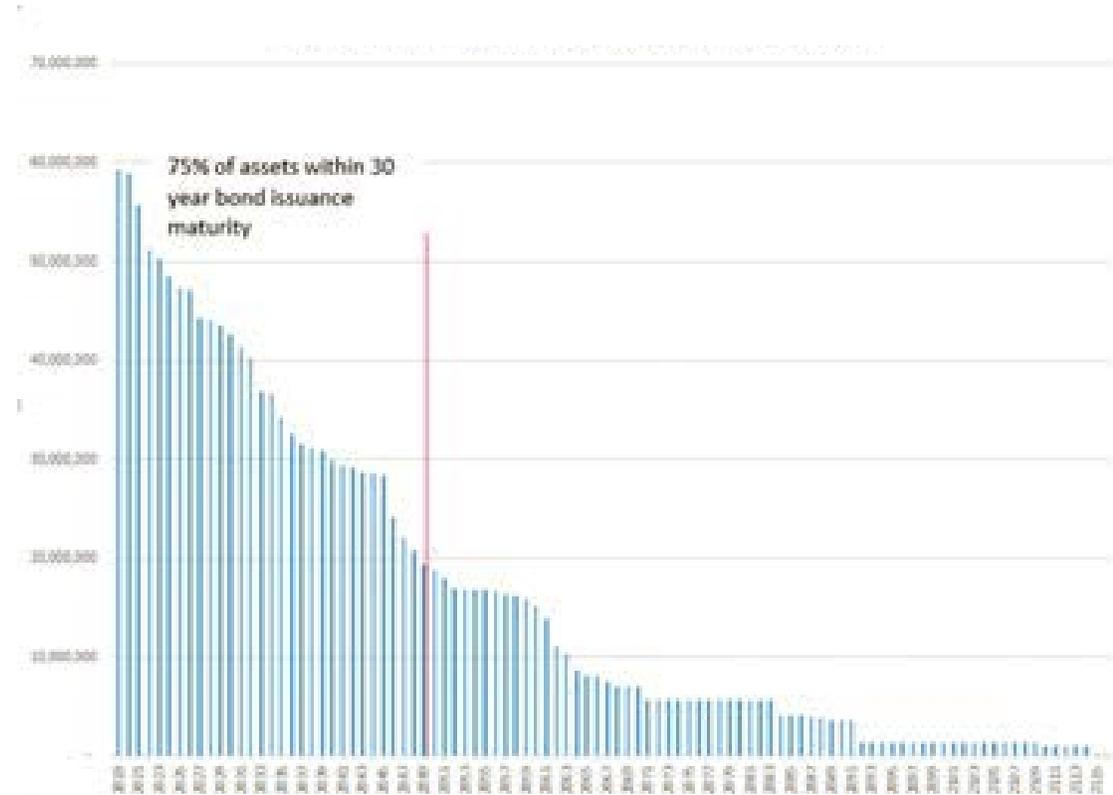
What is the impact?

- If debt is issued shorter than assets are in service, it front loads the payment in comparison to the value derived
- Amortizing debt over a longer period reduces single year cash flow needs for debt service
- Generally speaking, longer amortized debt will result in slightly higher total debt repayment due to principal outstanding longer and more interest accruing
- Longer dated debt also blends at a higher overall total cost due to the yield curve increasing with longer dated maturities
- Principal structure impacts other metrics

This strategy would be used as a secondary constraint for structuring

Continued.....Duration- Bond Years/Asset Lives

- A “perfect match” on this calc is difficult due to a number of constraints:
 - 30-year bonds are the most common long dated muni debt instrument
 - A level DS structure results in a 13 year average life
 - 25% of the Districts plant assets have final depreciation schedules dated past the 30 year mark
 - Assets are straight line depreciated
- Recommend targeting a modified portfolio steady state target of 70-75%

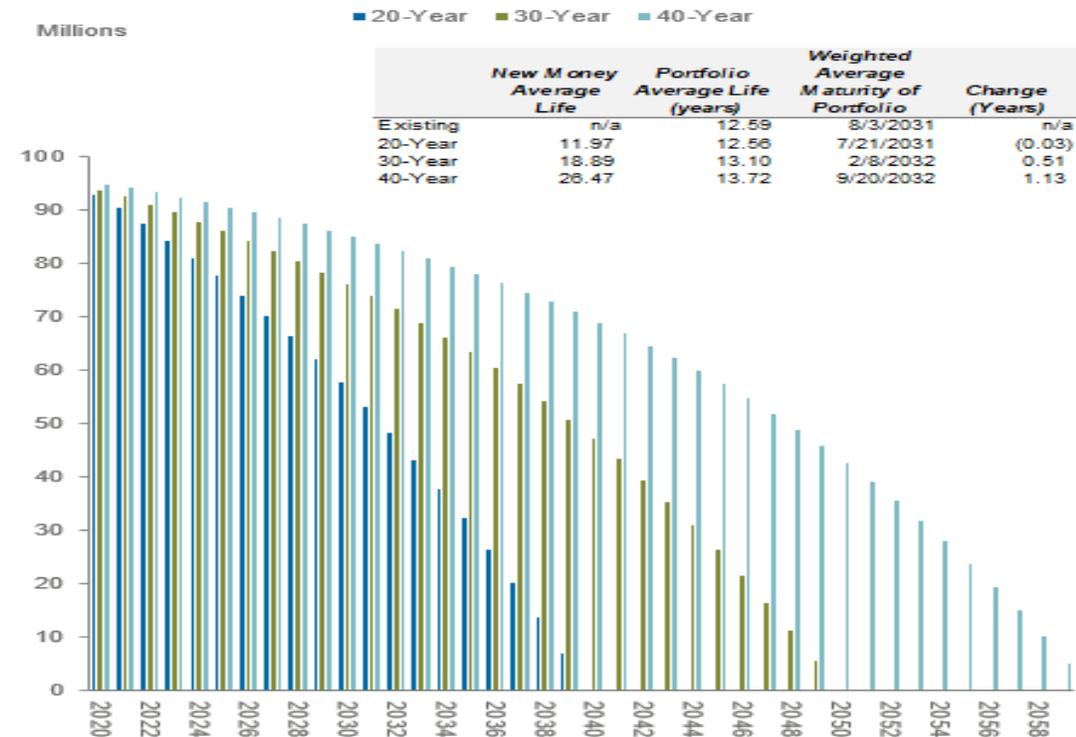


New Money Amortization and Weighted Average Life Comparison

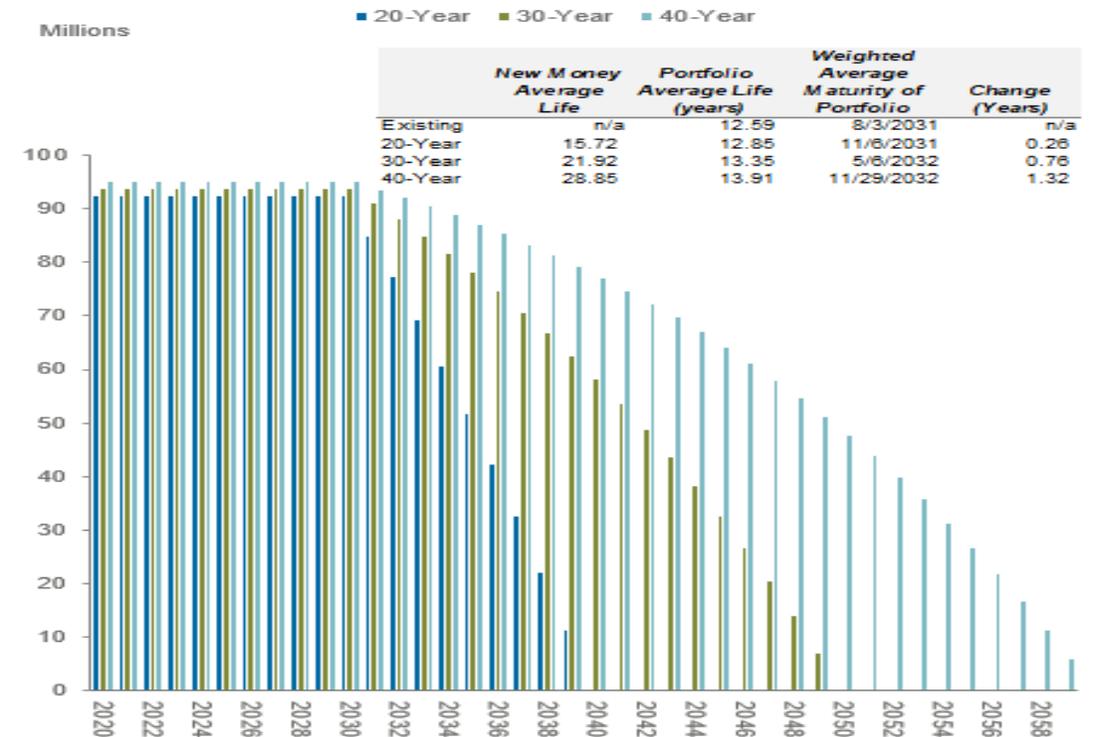


New Money Amortization and Weighted Average Life Comparison

Debt Outstanding Until Maturity (No Interest Deferral)



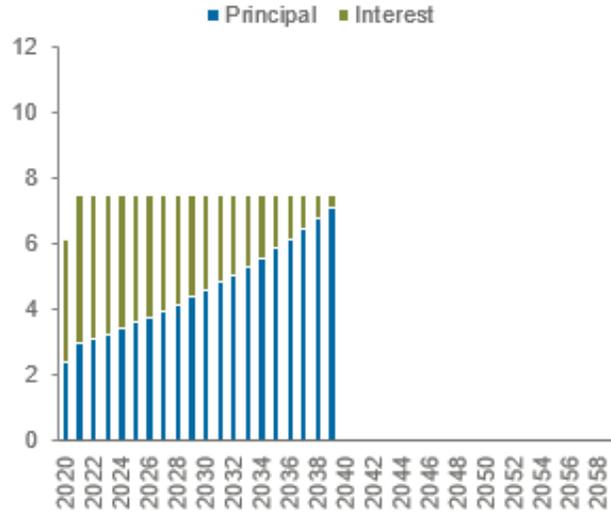
Debt Outstanding Until Maturity (10-Year Interest Deferral)



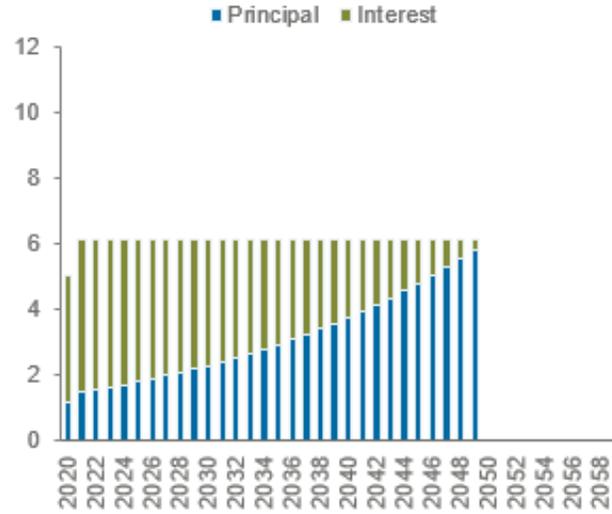
Existing average life as of January 1, 2019, assumes sinking fund amortization for CREBs and excludes PRP and ES Junior Lien obligations

Note: structure of debt transactions can vary dramatically.

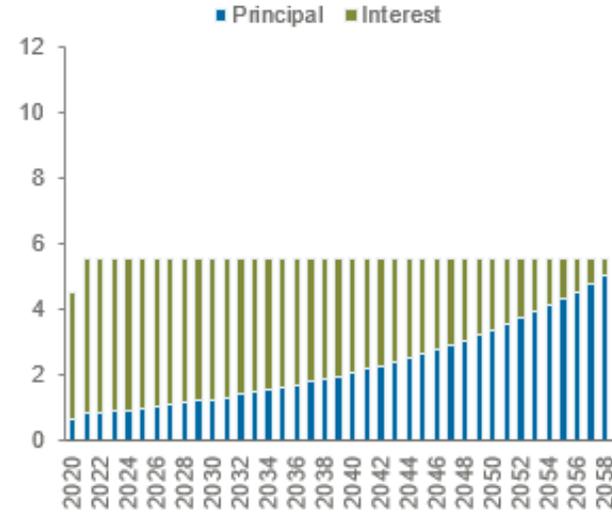
Level Debt (No Interest Deferral) 20-Year



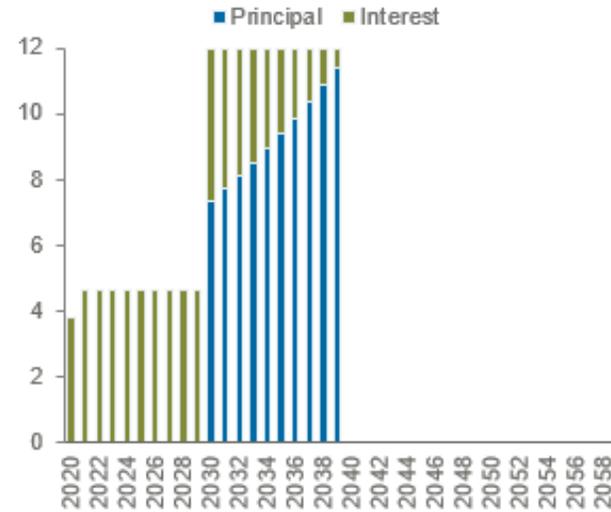
Level Debt (No Interest Deferral) 30-Year



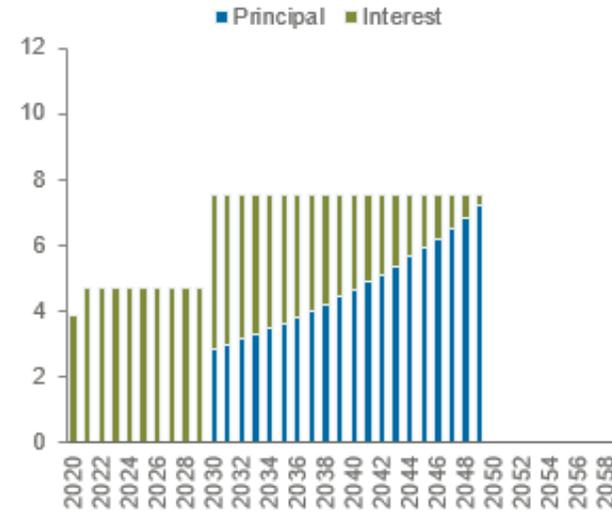
Level Debt (No Interest Deferral) 40-Year



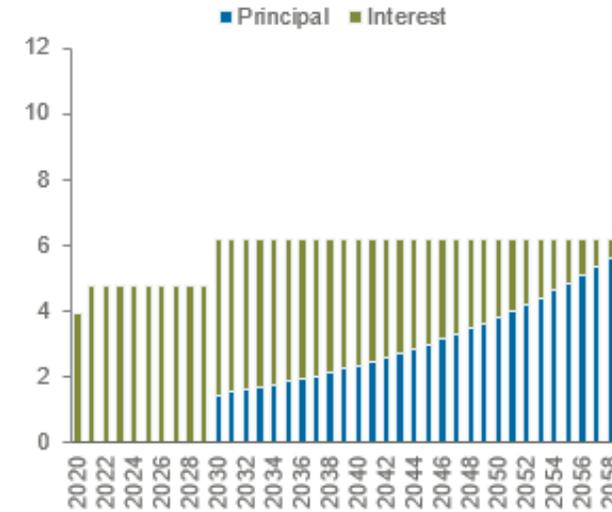
Level Debt (10-Yr Interest Deferral) 20-Year



Level Debt (10-Yr Interest Deferral) 30-Year



Level Debt (10-Yr Interest Deferral) 40-Year



Rates as of November 26, 2018. Assumes delivery date of March 5, 2019

- Structuring decisions to proactively align the bond years more closely with asset years will also impact other metrics and should be collectively managed

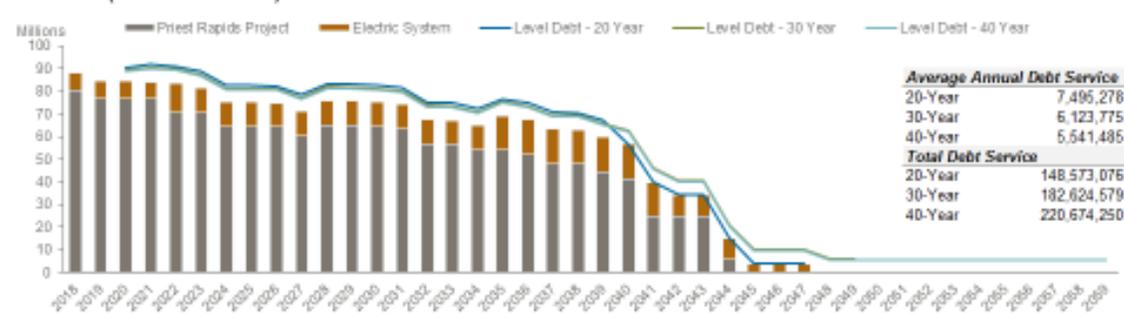
- Payment streams evaluated in structuring for NPV least cost impacts

Cash Flow Matching

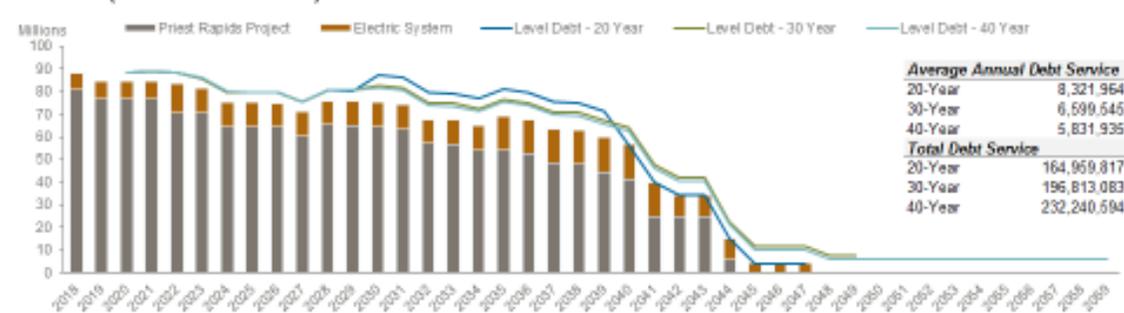
*Strategy for debt shaping

- Measures annual demand of cash requirements from revenue streams (not reserves) to pay annual debt service (P&I due) and equity funding of new construction in that year
- Target a steady state relative %
 - Dynamic to adjust with total Net Plant level
- Reflects a modified debt fraction approach thru annual rate payer funding needs
- Current analysis suggests a target range of 5-7%
- Maintaining debt ratio provides initial stability to this calculation, however shaping of debt (P&I) will be a driver of future fluctuation as well.
- Note: large anomaly may require special treatment
 - Note R&C use / refill to target

Level Debt (No Interest Deferral) Scenarios



Level Debt (10-Year Interest Deferral) Scenarios

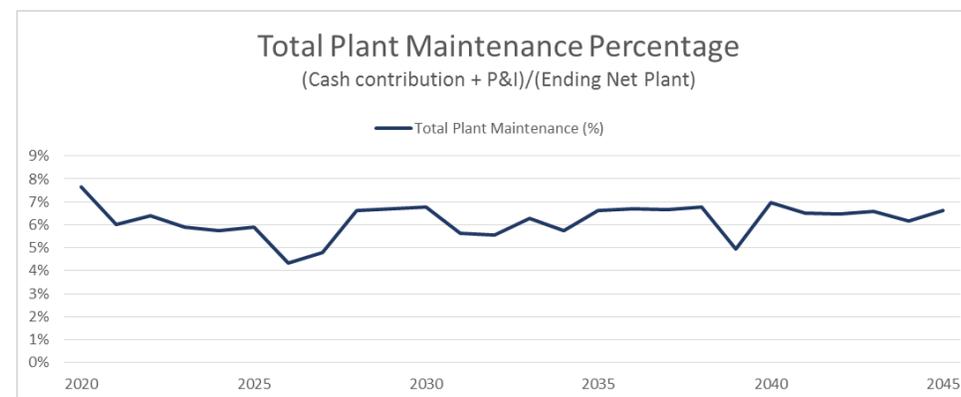


Rates as of November 26, 2018. Assumes delivery date of March 5, 2019

GRANT COUNTY PUD

2

J.P.Morgan



This strategy would be used as a secondary constraint for structuring

Other Key Debt Program Principles

- Strategic Plan Metrics – foundational and underlying assumed primary driver
 - Debt service Coverage
 - Consolidated > 1.8x Bond covenants: PRP >1.15x, Elec (P1) >1.25 (S2) >1.1x
 - Days Cash on Hand: ≥ 250 days (based on Moody's published criterion grid)
 - Debt to Net Plant: $\leq 60\%$ steady state target
- Declining overall debt amortization (principal amortization and overall debt service P&I)
- Asset / Liability matching on variable rate debt
- Management of DS reserves, CREBs sinking funds, JLB program
 - Semi annual calculation and amortization updates
- Refunding threshold targets – 3% overall efficiency and 50% escrow efficiency
 - Product, market, options and timing management
- Private use restriction management
- Compliance to IRS, SEC, MSRB, WA State and other regulatory bodies influence options and approach
- PRP power sales contracts and other contractual constraint management

Other principles/ metrics considered:

Principal vs depreciation calc

Fitch FADS calc (funds available for debt service)

SP metrics of Return on Equity and Retail Operating Ratio may have minor impacts in solving in the future

Debt to Equity / Debt to Total Assets

*note binding constraint results from inclusion of too many competing metrics

** selected principles based on industry best practice and prudent finance approaches

Next Steps

- Timeline/Activities

- Finalize policy approach
 - Approve metrics to manage to (influences future financing decisions) - [target Jan 2019](#)
 - General debt management metrics (completed)
 - Document and finalize references/procedures – [target Feb 2019](#)
- Refunding transaction – [March 2019](#)
 - Determine scope of overall transaction (may include additional refunding or restructuring based on policy decision)
 - Mandatory execution date of 4/1/19 for 2016L (Elec) bonds

Key Takeaways

- District analysis and recommendations
 - Debt Ratio - maintain the $< 60\%$ official District SP target, internally develop finance plans and budget to project landing at year end results within the band of 56-58%
 - Implement metrics procedurally to inform transaction structure and strategy (taking action on future transactions to improve metrics)
 - Bond Year/Asset matching
 - Plant Cash Flow matching
- Debt metrics above to be added into program and monitored with existing SP metrics and other existing program requirements
- Feedback before proceeding?



Powering our way of life.

Enterprise Technology Roadmap

Current State Update

November 30, 2018

Building the blueprint for technology transformation and enablement at GCPUD



Agenda

I. Roadmap Concepts

II. Key Projects and Initiatives

III. Roadmap Cost Estimation Method

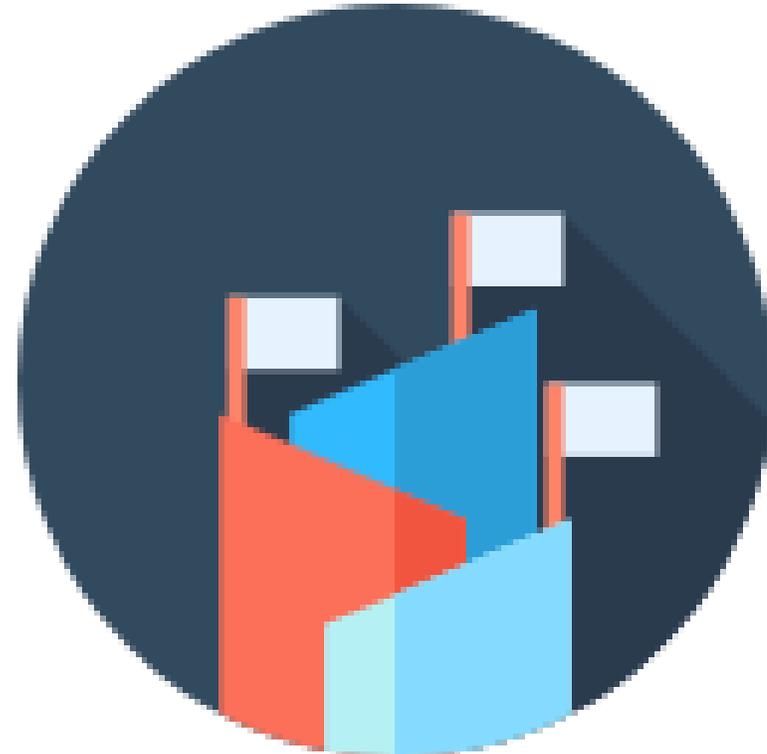
IV. Critical Partnerships & Key Players

01

Roadmap Concepts

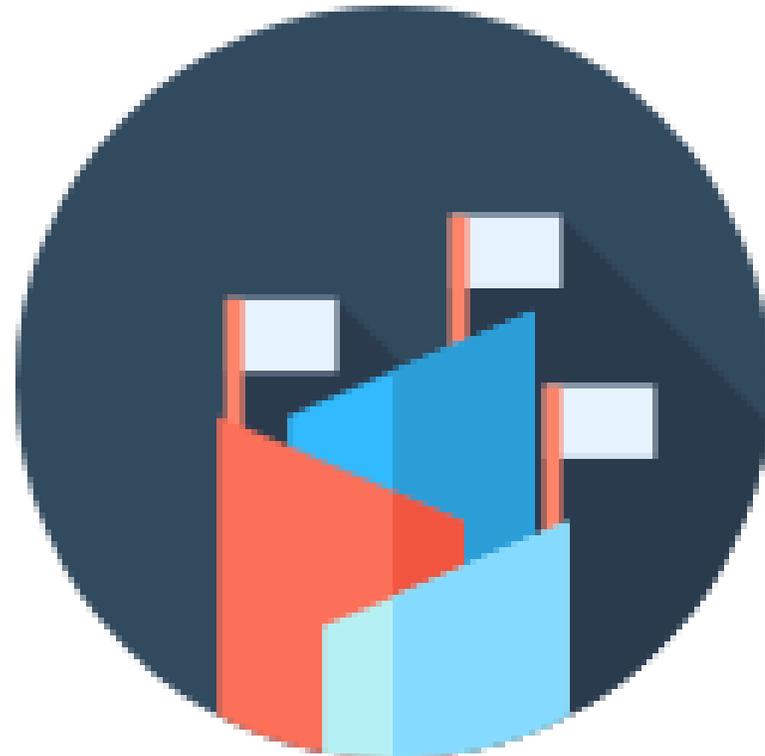
Why did we take this on?

- The organization didn't have control of its risks:
 - Cyber security controls were not keeping up with threats
- Highly inefficient processes driving up costs:
 - Crews drive to a service center to pickup trouble tickets and work orders
 - Timekeeping is manual, error-filled and slow
 - Warehouse operations are paper-based and labor intensive
 - We “over-maintain” equipment to ensure compliance since we lack condition data for prioritization
 - Crews lack current information, relying on paper drawings
- Prior technology projects frequently failed to deliver promised benefits (Maximo, MSGP, Cisco Prime)

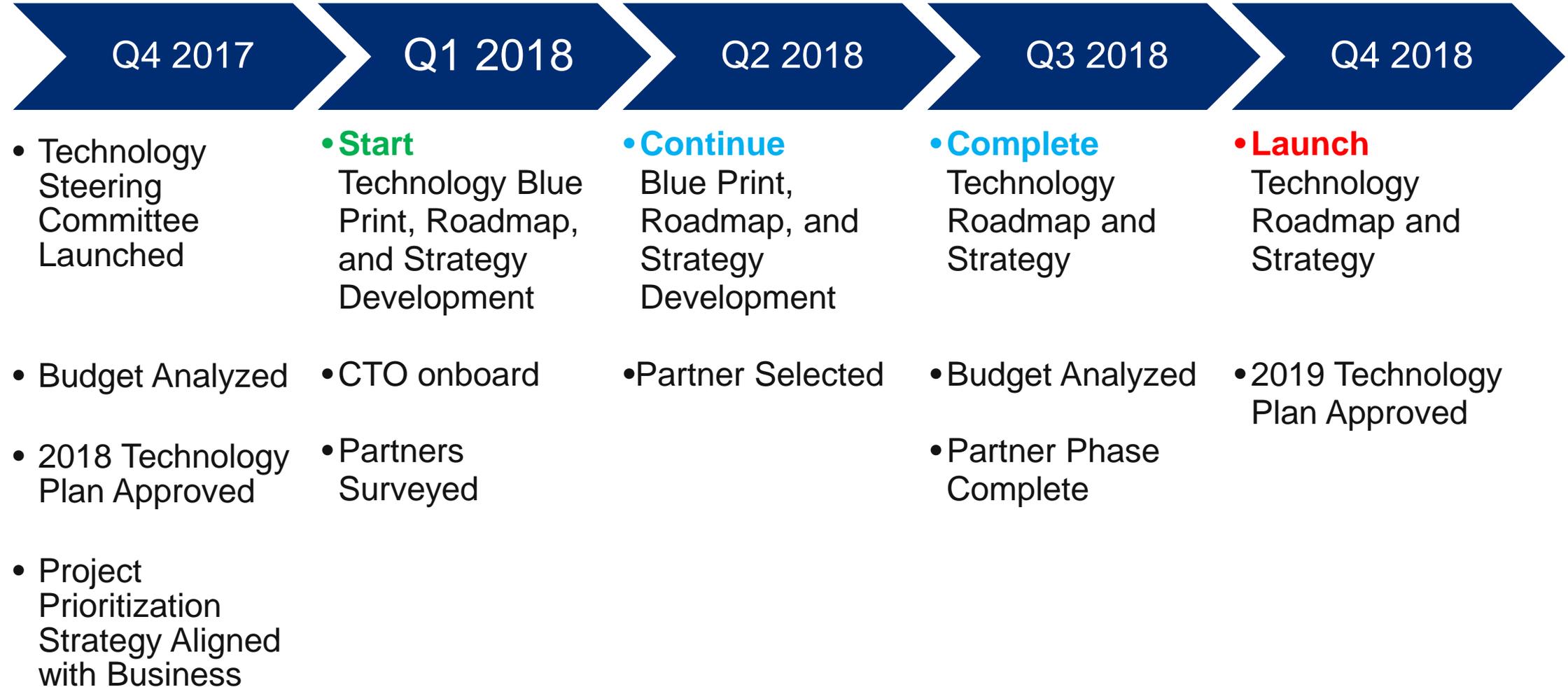


Why did we take this on?

- The Commission and Leadership recognized that:
 - Siloed operations were creating expensive redundancy in personnel and systems
 - We were operating without a game plan or coordination resulting in tremendous waste
 - GCPUD didn't have the expertise to solve the problem
- We embraced our “Ah Ha!” moment and:
 - Re-organized to break down silos
 - Purposely identified needs and sought expert help



Roadmap Timeline

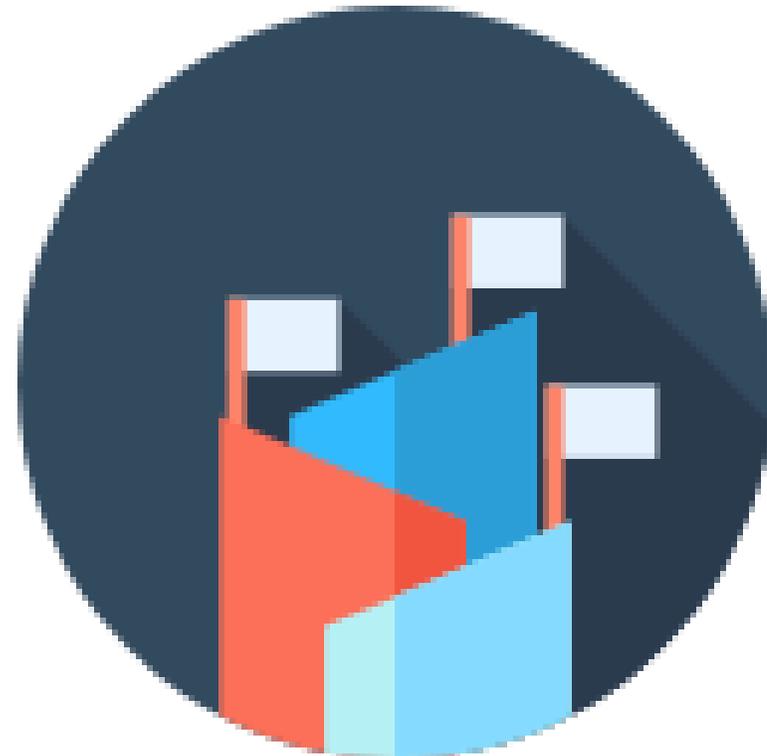


What is the Roadmap?

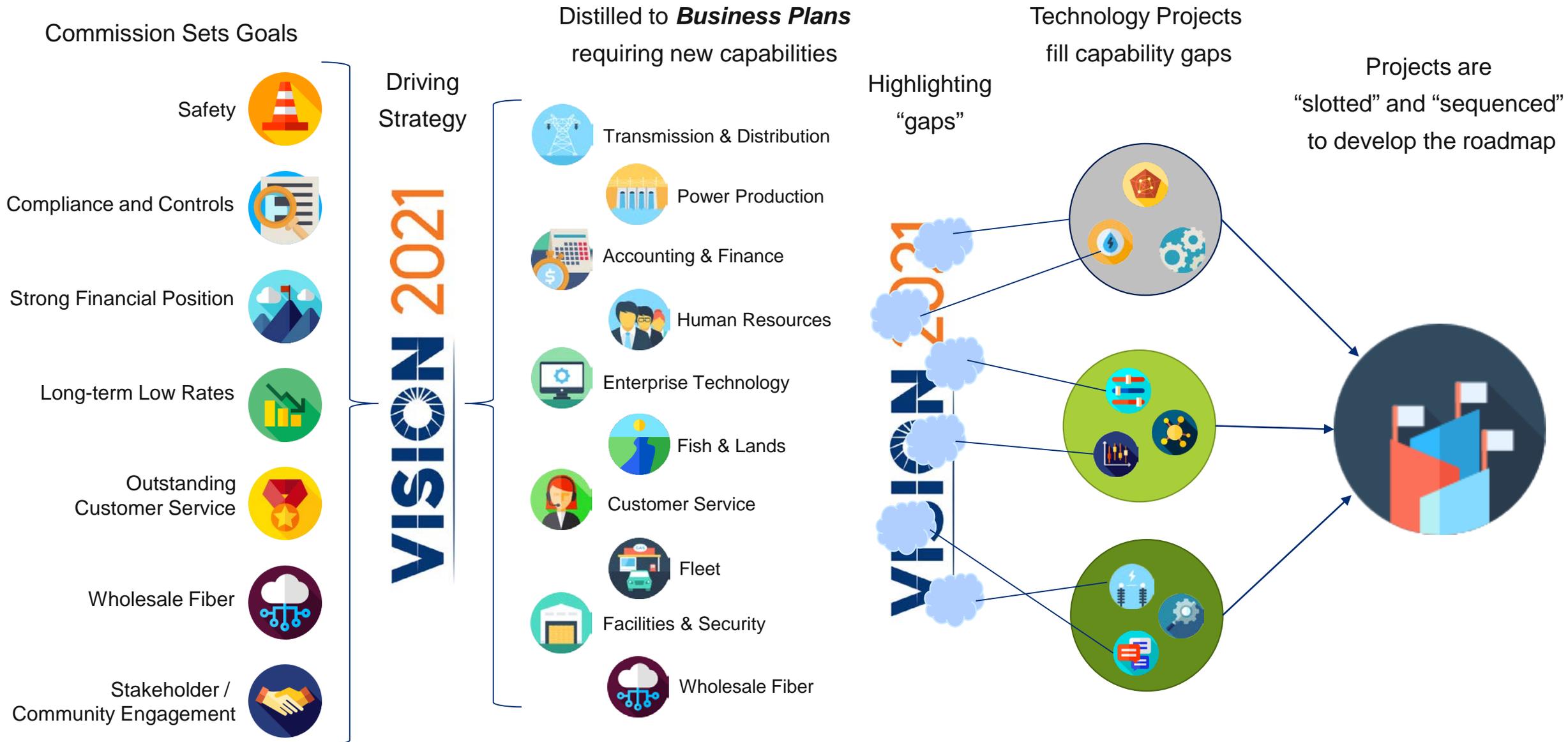
The work to achieve the Commission's Goals

A documented multi-year plan governing technology investments at GCPUD to:

- Reduce the risk to personnel & ongoing operations
- Manage escalating operational costs
- Address “technology debt”
- Provide better service to our customers
- Improve project delivery success

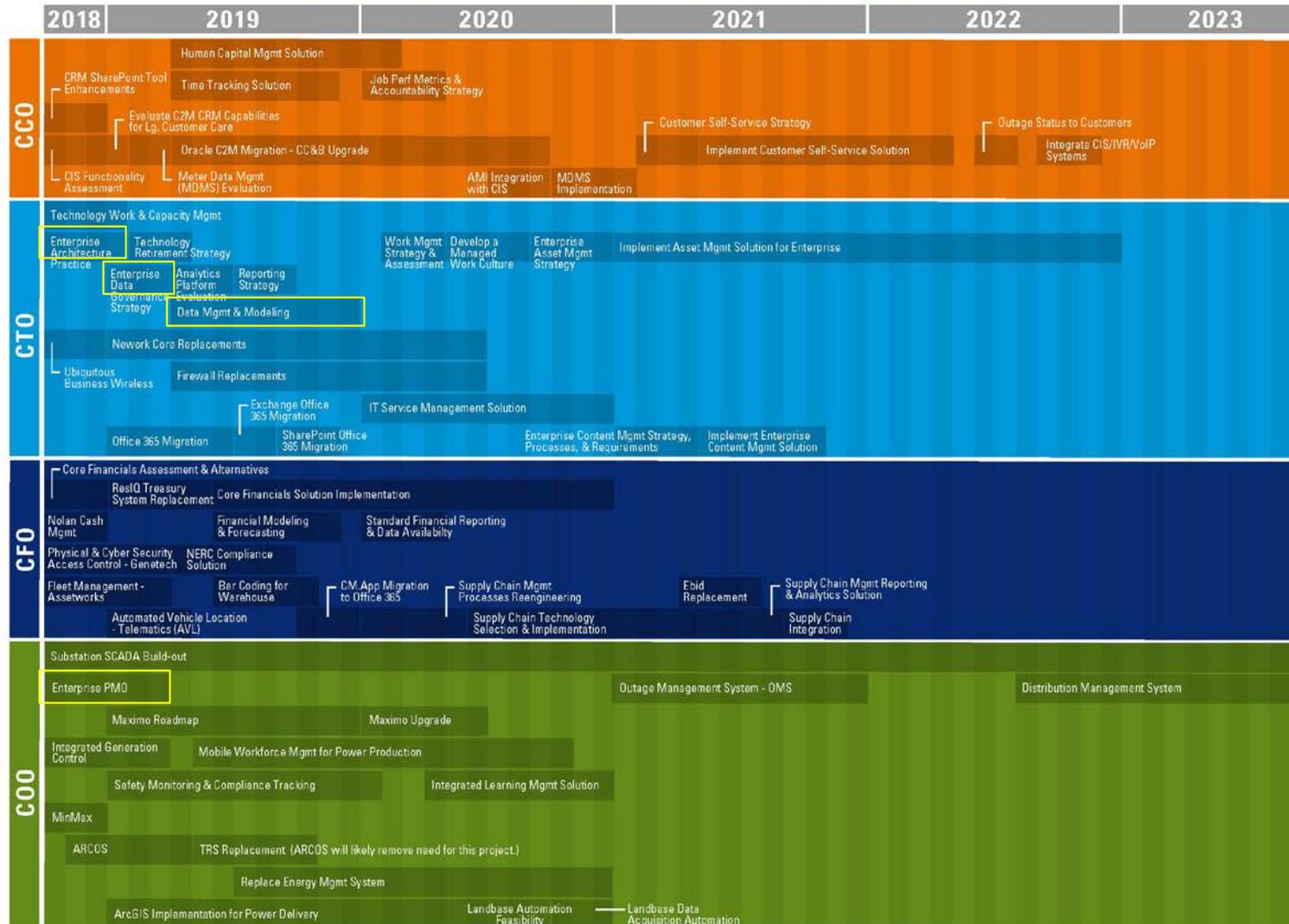


How was the Roadmap created?



What does it tell us?

TECHNOLOGY ROADMAP BY FUNCTIONAL AREA



- **Long-term** plan with 60-month time horizon
- Work is **front-loaded** creating a pressure wave of projects starting in 2018/2019
- Projects are organized and sequenced within business domains to **reduce change overload**
- **Foundational** projects enable future successes (highlighted)
 - Enterprise Architecture Practice
 - Enterprise Data Governance Strategy
 - Data Mgmt & Modeling
 - **Enterprise PMO**



Microsoft Excel
ro-Enabled Works

What does it tell us?

Initiative Projects												
Project ID	Project Name	Project Description	Project Scope	Project Schedule	Gaps Addressed	People & Process Impacts	Labor Resources	Hardware Costs	Software Cost	3rd Party Costs	Dependencies	Business Unit
1.3	Mobile Workforce Management for Power Delivery	Placing 'laptops in the trucks' and handheld field devices where appropriate to electronically connect the field crews with the backend systems, processes and people needed to do their jobs. This would require the devices, the communications, the applications and the integration amongst systems as defined. Other departments, such as Safety or Environmental Affairs may also be included to benefit from the Mobile solution for field inspections, audits and other data collection activity. Mobile should integrate with Asset Management to capture asset information and maintenance activities. Should also integrate into a Work Management system to generate follow up work orders. Suggested this start near the end of the ADMS project due to resource constraints and need for OMS functionality to be fed to MWFM.	Scope includes requirements gathering, business process changes, vendor software evaluation and selection, hardware (both servers and mobile devices), security and application modules, communications, implementation and training.	24 months	5, 17, 32, 70; Mobile Workforce Management functionality absent	People: Control room operators and field crews will need training. IT resources to support the system in production will need to be identified - Est. 1 IT FTE. Processes: Processes to coordinate information exchange between the operations center and field crews need to be developed. Operating limits and guidelines for a crews ability to directly update the OMS need to be defined.	1 Project Manager (Full time) 1 Control Room Suprv/Operator (16-24 hrs/wk) 1 Field Ops SME (16-24 hrs/wk) 1 IT/Hardware SME (2-4 hrs/wk) 1 IT/Network Comms SME (8-16 hrs/wk) 1 IT/Security SME (2-4 hrs/wk) 1 IT/Arch SME (8-16 hrs/wk) Time commitments will vary depending on the phase of the project. Costs for these resources are not included in cost estimates.	Devices: \$3000 to \$5000 per user for ruggedized laptop units and mounting stands in vehicles. Servers: Dependent on GC performance requirements. Est \$150,000 to \$300,000.	\$1M to \$2M	Outside consulting services for PM and associated SMEs will depend on the amount of work GC elected to contract. Estimated at \$1.5 M to \$2.5M for the duration of the implementation.	5.4; EAM Strategy 6.1; Implement ADMS 7.1; AVL 10.5; Ent Arch Practice	Operations

- Project ID; uniquely identify each entry as “initiative.project”
- Project Name; short descriptive name
- Project Description; describes the action to be taken and in some cases supporting information
- Project Scope; describes scope of the actions being taken and scope of the organization impacted
- Project Schedule; duration of the project in months
- Gaps Addressed; references back to the individual gaps this particular project is expected to address
- People and Process Impacts; description of how this project will impact the people and processes within the organization
- Labor Resources; roles and volumes (example 0.5 fte) required over the duration of the project, not where they're from
- Dependencies; identify other roadmap projects by project ID or general dependencies by text
- Business Unit; identification and selection of projects by Business Unit

Projects “one-pagers” capture key info

G Project Detail - Implement Financial ODS & Reporting

Project Objective

To deliver reporting that combines operational details with financial data and drill down capabilities resulting in a clear picture of how operational activities impact financial reporting. Replace current SSRS reports with reporting that can be used District wide.

Description and Activities

Key Activities

- Gather requirements and design the project & BvA reports
- Define dimensions, attributes, elements and measures
- Develop the data model
- Evaluate analytic tools with prebuilt GP integration (e.g., ZapBI, JetReports)
- Make the decision to purchase or build
- Implement purchased solution or:
 - Design the database, populate with GP actuals, and budget and forecast data
 - Design, build and validate the project & BvA reports

Integrations

- From GP for dimensions, key attributes, elements and accounts
- From GP for labor and non-labor actuals
- From Budget and Forecast Spreadsheet for year by year budget and forecast data

Process / Workflow

- Document the timing, processes, roles and responsibilities required to maintain and refresh the ODS

Change Management

- Create a report inventory with a description of the report, an explanation of report data sources and assumptions
- Create a glossary of terms used on the reports and their definition
- Create a reporting home page for the inventory, glossary and links to the reports
- Build and deliver communications to explain the new generation of reports

Governance

- Implement Data Governance on all ODS components to ensure accurate reporting
- Remove SSRS reports that are replaced by the new reports
- Retire YEP when it is no longer needed
- Maintain the report inventory, glossary and reporting home page

Complexity		Cost		Business Impact	
Dimension	Value	Dimension	Value	Dimension	Value
Change Management	High	Internal Resources	Med	Process	Low
Functional	High	Internal / External \$	Med	Reporting	High
Integration	Med	Overall Cost: Med		Functionality	Low
Data Conversion	Low			Data Quality	Med
Overall Complexity: Med				Data Availability	Med
				Overall Impact: Med	

Assumptions & Dependencies

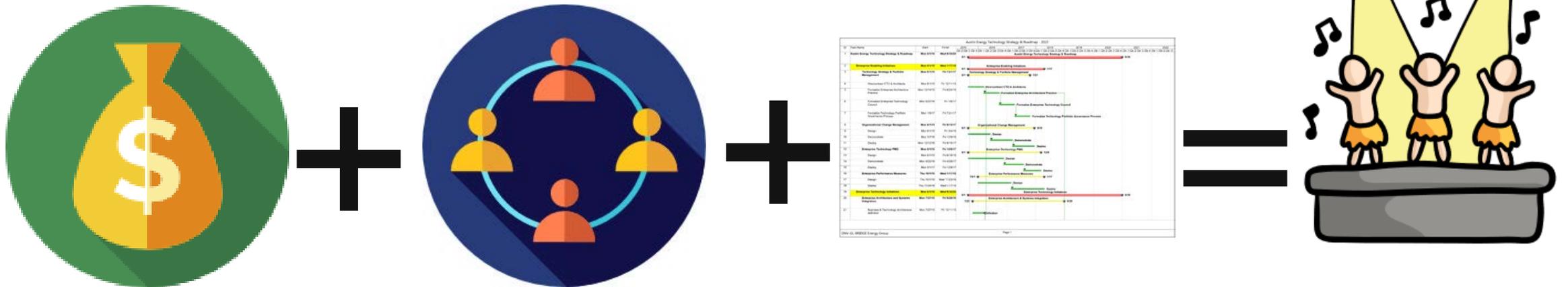
- Licenses exist for creation of the ODS
- Reports will be generated using current reporting tools
- Resources required for ongoing support of the ODS exist or are planned and budgeted
- Resources required for ongoing support of the reports exist or are planned and budgeted

Key Elements

- Overview
- Key Activities
- Cost
- Duration

How will we get it done?

- Understand project impacts are fully understood to ensure all stakeholders are included
- Reorganize technology services to **eliminate overlaps** and **clarify responsibilities**
- Execute one major project at a time per business function to avoid **change overload**
- Establish formal project management to **manage project deliver risk**
- Recognize we likely won't get it all done as planned (funded at 75% of need)



Preserving the Value: Culture Change

- Steering Committee governs technology investment and monitors roadmap progress across the Enterprise
- CTO guides and oversees long-term technology strategy, execution and value proposition
- Stakeholders fully involved during life-cycle of each project
- Portfolio Management Group manage roadmap risk, project sequencing and value attainment
- Project Management Group ensures project delivery risk is managed for successful delivery

02

Key Projects and Initiatives

Key Projects by Functional Area

Customer

- Human Capital Management Solution
- Implement a Time-Tracking Solution
- Upgrade CC&B

Operations

- Substation SCADA build-out
- Integrated Generation Control
- Energy Management System Replacement
- Trouble Reporting System Modernization
- ARCOS Crew Management
- ESRI ArcGIS for Power Delivery
- Mobile Workforce Management

Finance

- Assetworks Fleet Management
- Vehicle Telematics
- Physical Access Control
- Warehouse Barcoding and Inventory Control
- Core Financial System Replacement
- Standard Financial Reporting

Technology

- Ubiquitous Business Wireless Access
- Firewall and Network Modernization
- Office 365 Migration including Exchange Email and SharePoint
- Establish an Enterprise Architecture Practice
- Enterprise Asset Management Strategy
- Enterprise Data Governance Strategy

See Project Details Handout

03

Roadmap Cost Estimation Method

Roadmap Costs by Year

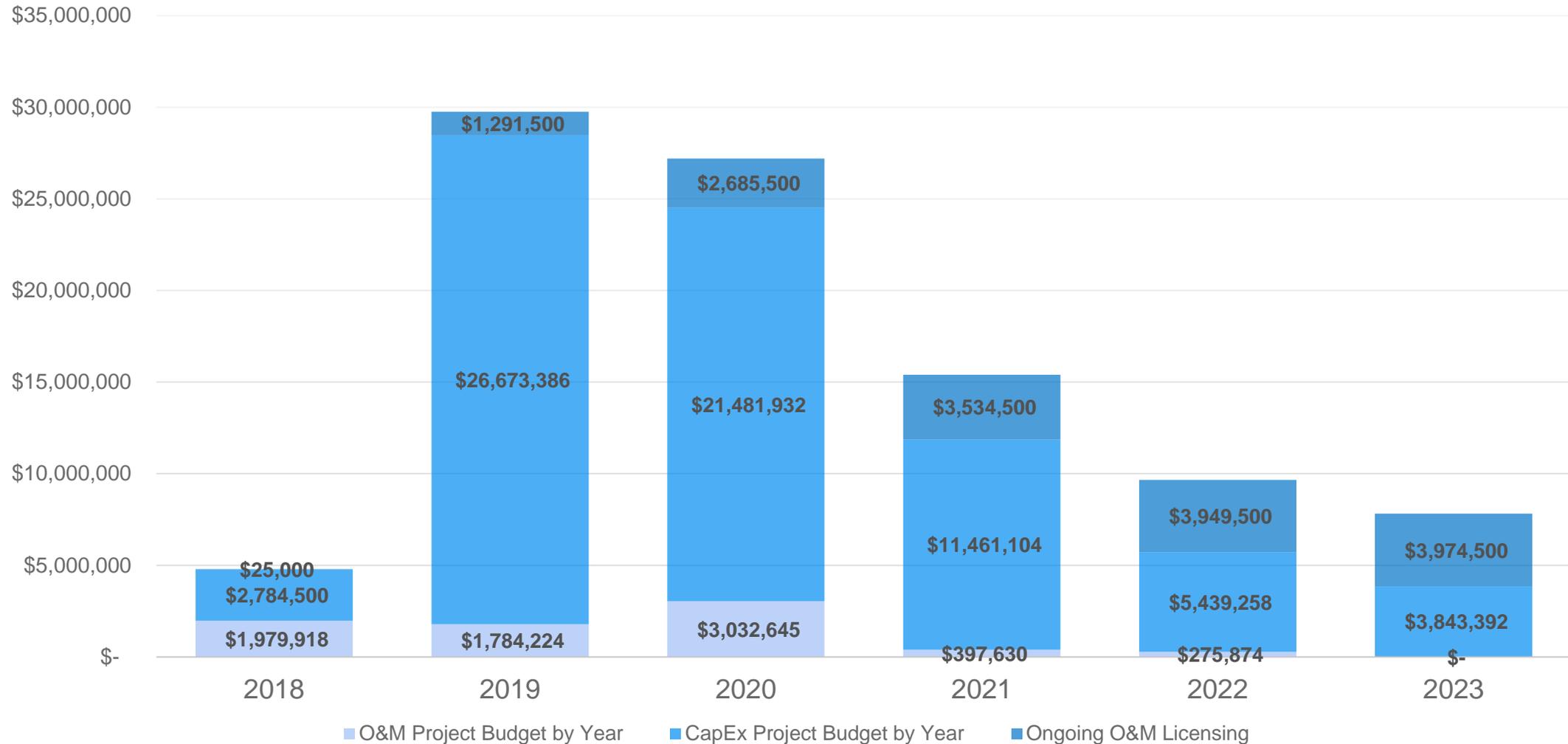
**Beneficial project impacts for cost reductions are not included in ongoing expense calculations.

	2018	2019	2020	2021	2022	2023
One Time Project O&M	\$ 1,979,918	\$ 1,784,224	\$ 3,032,645	\$ 397,630	\$ 275,874	\$ -
One Time Project CapEx	\$ 2,784,500	\$ 26,673,386	\$ 21,481,932	\$ 11,461,104	\$ 5,439,258	\$ 3,843,392
Incremental O&M Licensing	\$ 25,000	\$ 1,291,500	\$ 2,685,500	\$ 3,534,500	\$ 3,949,500	\$ 3,974,500
	\$ 4,789,418	\$ 29,749,110	\$ 27,200,077	\$ 15,393,234	\$ 9,664,632	\$ 7,817,892

Critical Assumptions

- Licensing cost estimates are 20% of total for roadmap budget estimate
- Budget uses 75% of roadmap dollars, assuming 25% of work slides into trailing year
- Projects are evaluated for net benefit before being committed to implementation
- Some project may not result in a direct cost reduction, but instead reduce operating risk (e.g., Cyber)
- Investment is front loaded to prioritize projects with greatest impact
- Ongoing investment expected above historic levels but below 5-year roadmap annual average spend

Annual Roadmap Expenditure



04

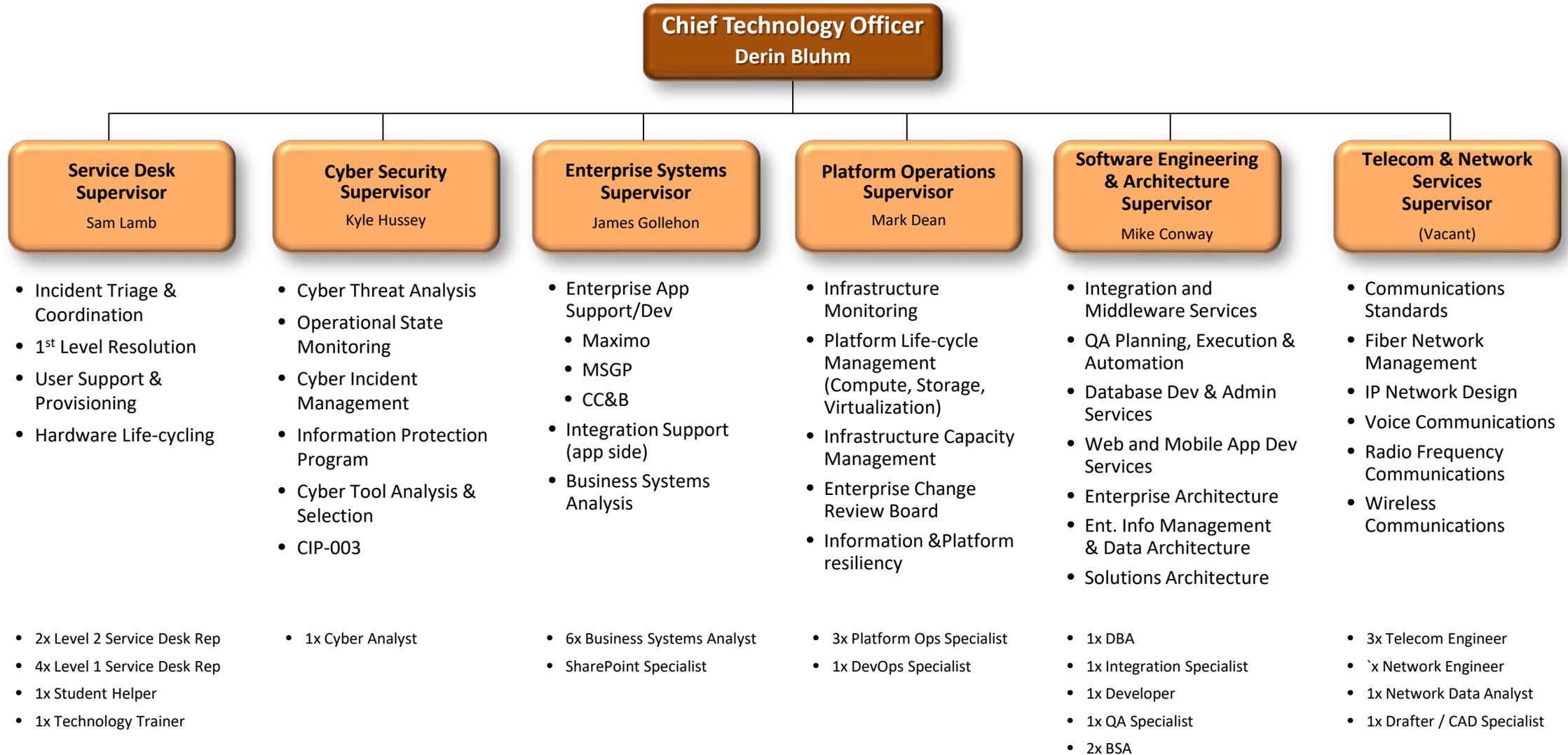
Critical Partnerships & Key Players

PMO, SMEs, Consultants, SIs, etc.

The skillsets required to complete the projects will come from the most appropriate source, whether internal or external

- The **PPM** manages the portfolio and releases projects to PMO
- The **PMO** manages project execution and skillset sourcing
- Internal functional experts (**SMEs**) provide context detail
- 3rd Parties with expertise in the specific technology fill **project need**
- **Ongoing** work is staffed with internal personnel when possible
- 3rd Parties provide **staff augmentation** when internally constrained

Rent short-term needs, staff for long-term ongoing work



Questions





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Human Performance

The culture of an organization is the product of the individual and group with respects to values, attitudes, competencies and patterns of behavior that determine the commitment to and the style and proficiency of an organizations overall health.

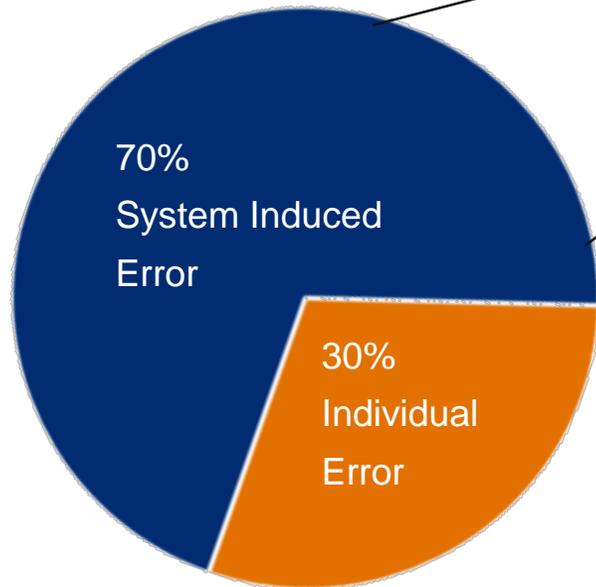
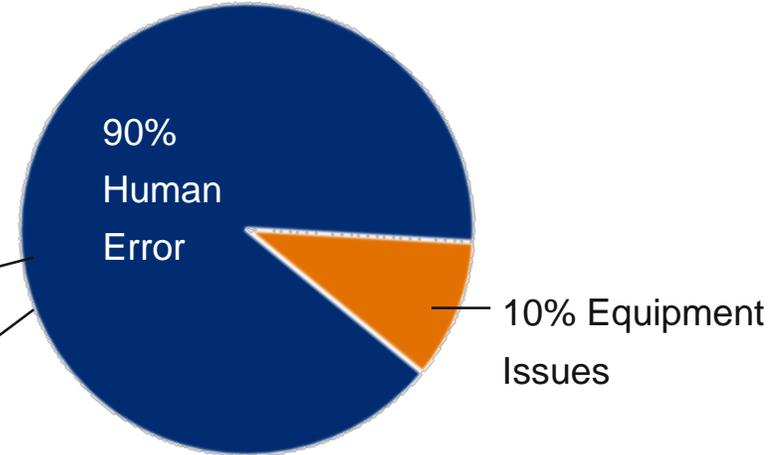


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Human Error Origins

Operational error

- 90% Human Error
- 10% Equipment Error



Human Error

- 70% Latent Organizational Weakness
- 30% Slip, trip or lapse of concentration (Individual's Mistakes)

US Dept. of Energy, 2009

Achieve and Maintain A Zero Incident Workplace

- Prioritize Work and Safe Work Practices over job completion
- Speak up / Listen up
- Stop when uncertain
- Use data driven analytical approach
- Ensure employees, contractors and public are protected from harm
- Eliminate incidents!

TWIN Analysis

- TASK DEMANDS: include time pressure, high workload, **simultaneous/multiple tasks**, repetitive actions or monotony, **critical steps or irreversible acts**, Interpretation requirements, **unclear goals, roles or requirements** and lack of or unclear standards.
- WORK ENVIRONMENT: **Distractions, interruptions**, Changes/departures to routine, confusing displays or controls, workarounds, out of service instrumentation, obscure electrical supplies or configurations, unexpected equipment conditions, lack of alternate indication, **personality conflicts**.
- INDIVIDUAL CAPABILITIES: **Unfamiliar with or first time performing task, Lack of knowledge, new technique not used before, imprecise communication habits, lack of proficiency or experience, indistinct problem solving skills, unsafe attitudes for critical tasks, Inappropriate values.**
- HUMAN NATURE: Stress, habit patterns, assumptions, complacency, overconfidence, mind-set, **inaccurate risk perception**, mental shortcuts or biases, Limited short term memory.

Human Performance Principles

- People are fallible
- Error-Likely situations are predictable
- Individual behaviors are influenced
- Operational upsets can be avoided
- Events (Incidents) “ARE” avoidable!

Human Errors

- Errors are mistakes – “unintentional”
- Violations – Deliberate and Intentional
- Reaction is the key – Determines Outcome
- Instrument of learning

Organizational Climate / Culture

Definition:

“The culture of an organization is the product of the individual and group with respect to the values, attitudes, competencies and patterns of behavior that determine the commitment to and the style and proficiency of an organizations health and level of human performance.”

Normalization of Deviance

Definition:

“The gradual process through which unacceptable practice or standards become acceptable. As the deviant behavior is repeated without catastrophic results, it becomes the social norm for the organization.”

Standards Creep

Normalization of Deviance

- Famous Last Words

**“I’ve done it this way a 1000 times, trust me!”
(Anonymous)**

- Remember – it only takes less than a second for a incident/accident to occur!

Error Precursors

- Time constraints
- Distractions
- Complacency
- Overconfidence
- Incomplete instructions
- Peer pressure
- Change in schedule
- Personal stress
- Lack of Proper Tools
- Limited resources
- Mental block
- Inability to recognize limitations
- Lack of focus
- Fatigue

Human Performance Tools

- Situational Awareness
- Questioning Attitude
- Take-A-Minute
- Stop Work

Questioning Attitude

Will foster awareness of uncertainty, assumptions, risk factors and the significance of a decision or action prior to proceeding!

Properly engaged employees will ask about work task, process and environment.

Exist at all times

Proper work stoppage

Understand when to use tools

Used when.....

Take-A-Minute

- Will improve an employees situational awareness!

- Especially important when.....
 - First arriving at the job site
 - Interruptions to work occur
 - Moving to the next job or task

- Compare current job site conditions with JHA, job brief, job plan & related procedures

Take-A-Minute

- Purpose is to identify.....
 - Hazards and complicating factors
 - Conditions and precautions discussed
 - Review critical steps to safety
- Based on the revised jobsite status.....
 - Hazards are eliminated
 - Appropriate defenses installed
 - Appropriate contingencies developed
- Properly engaged to ensure positive outcome

Stop Work

- Knowledgeable, trained employees will stop work when appropriate!
- When a leader or co-worker stops work – STOP!

STOP means STOP!

- Address the issue(s) before proceeding with the task and update the Pre-Job Brief
- Work deliberately while mindfully engaged.

Human Performance Tools

- Job Briefs
- Self-Checking
- Verification Practices
- Clear Communication

Pre-Job Brief

- Ensure employee(s) understand scope, critical activities and safety requirements
- ID what to accomplish and what to avoid
- ID hazards and how to eliminate or what defenses to install
- Goal is to perform task the 1st time without error, injury or damage
- No job treated as routine
- Enhances a questioning attitude
- PPE requirements identified
- Review worst probable scenario and how to respond are discussed

Post-Job Brief

- Job conditions are reviewed
- Program gaps are identified
- Corrective actions are discussed and recommendations documented
- Unexpected outcomes identified
- Quality of work package discussed and corrections documented
- Critical learning opportunities
- Purpose is to identify organizational weakness and prevent errors
- Was the Pre-job brief accurate and sufficient?
- Was the JHA accurate and sufficient?
- Communicate any program gaps to the Foreman/Safety/Supervisors
- Did we meet our goal of no error, injury or damage



STAR

STOP

Gather your thoughts, know your system.

THINK

Is this safe? What am I affecting?

ACT

Anticipate what your actions will cause.

REVIEW

Did I get the result I expected? If not **STOP** and determine the problem.

Verification Practices

- Peer Checking or Concurrent Verification
 - Must be qualified
 - Must stay focused
 - Must be experienced with the task

- Independent Verification
 - Separated by time – cannot be together
 - Must be experienced
 - Must stay focused to ensure accuracy of work performed

Clear Communication

- Three-Way Communication - WECC COM002-4 standard
 - What is it?
 - Must stay focused for accuracy
 - Third step is critical

- Phonetic Alphabet
 - Do not use phonetic words other than those designated
 - Do not use slang
 - Avoid similar words such as increase and decrease (avoid confusion)
 - Do not use for written communication, only for verbal communication

Well Prepared and Trained Staff

- Procedure Use and Adherence
 - Understand and follow intent and direction of procedure or work instruction
 - Verify procedure is current
 - Procedure errors must be reported and corrected
- Turnover – shift to shift
- Audits and Investigations
 - Determine causal factors that lead up to the incident
 - Put yourself in the employees place
- Staff Development – Everyone's job

Thank You



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