Town of Reading
Meeting Minutes

Board - Committee - Commission - Council:

RMLD Citizens Advisory Board

Date: 2017-04-12	Time: 6:30 PM
Building: Reading Municipal Light Building	Location: Winfred Spurr Audio Visual Room
Address: 230 Ash Street	Session: Open Session
Purpose: General Business	Version: Final

Attendees: **Members - Present:**

Mr. George Hooper, Chair (Wilmington); Mr. Dennis Kelley, Secretary (Wilmington); Mr. Neil Cohen (Reading); Mr. Jason Small (North Reading)

Members - Not Present:

Others Present:

Mr. Hamid Jaffari; Ms. Joyce Mulvaney, Ms. Jane Parenteau; Ms. Kathleen Rybak; Mr. Mayhew Seavey, PLM Electric Power Engineering

Minutes Respectfully Submitted By: Mr. Dennis Kelley, Secretary

Topics of Discussion:

1. Call Meeting to Order – G. Hooper, Chair
   Chair Hooper called the meeting of the Citizens' Advisory Board to order at 6:30 PM and noted that the meeting was being audio recorded.

2. Approval of Minutes – G. Hooper, Chair
   Materials: Draft Minutes from the March 1, 2017 meeting.

   Mr. Kelley made a motion that the Citizens' Advisory Board approve the Minutes of the March 1, 2017, meeting as written, seconded by Mr. Cohen. Hearing no further discussion, **Motion carried 4:0:0** (4 in favor, 0 opposed, 0 absent).

3. FY18 Operating Budget – H. Jaffari, Director of Engineering and Operations and J. Parenteau, Director of Integrated Resources Division (IRD)
   Materials: FY18 Operating Budget dated March 31, 2017

   Ms. Parenteau began the Operating Budget presentation with a review of the *Actual and Projected Fixed and Semi-Variable Costs* spreadsheet (page 11 of Agenda packet), noting that RMLD is a highly-fixed utility. The spreadsheet provides a high-level overview of RMLD fixed costs (82.68% of budget), which for the most part we have no control versus the remaining semi-variable costs (at 17.32% of budget).

   Ms. Parenteau reviewed the *Schedule of Revenues and Expenses* (page 10 of Agenda packet). As a municipal light department, RMLD can earn 8% maximum return on investment (ROI) of net plant value. Fuel charges, and purchased power capacity and transmission are pass-throughs to the customers and RMLD does not calculate this into a return. Base revenue is what the RMLD utilizes to run the Department and earn that ROI. Fiscal Year 2017 budgeted Base Revenue was $25.5m, and we are on target with a projection of $25.4m (based on 8-months actuals). We estimate an increase of $1m

to Base Revenue (from FY17 to FY18) to meet budgeted expenses. This can be earned one of two ways, either with an increase in sales or a rate increase. Over the last five to 10 years, RMLD sales have been flat to decreasing due to a combination of factors (environmental, the economy, efficiency measures, etc.). With no significant commercial grown anticipated, RMLD is assuming flat sales from FY17 to FY18. Therefore, the $1m would need to be achieved through a rate increase. Mr. Mayhew Seavey, Principal with PLM Electric Power Engineering, was present to review the results of the recent Cost of Service Study and to present alternative rate design scenarios.

Ms. Parenteau continued with a review of the Operating Revenues. Forfeited discount represents the customer that do not take advantage of discounts offered and this is recognized as revenue. The Energy Conservation program is a pass-through. What the RMLD collects (on customer billing) is kept in a separate account to fund those projects, so that there is no cross-subsidization into any other expenses. The NYPA credit is a contra-revenue account. The NYPA credit is the result of some NYPA power that was negotiated with the New York Power Authority that only residential customers are entitled to get. The total of the fuel charge plus the NYPA revenue should equate to the fuel expense being a pass-through.

Mr. Jaffari reviewed the Operations and Maintenance Expenses, noting that this year we are showing the FERC accounting numbers (first column). In FY18, in accordance with FERC accounting practices, RMLD is moving capital "expense" labor (labor to take things down) involved with capital work from the Operational and Maintenance Budget and moving it to the Capital Budget. Therefore, there were additional shifts in the labor expense from the Operations and Maintenance to Capital.

Mr. Jaffari reviewed the various departments/categories, which each include regular and overtime labor (less capital portion), and department expenses such as vehicles, training, etc. Of note, Supervision and Engineering includes three new positions. Line General includes dead-time (including employee time off), along with the overtime for the operational side. Street Lighting (585) represents routine patrolling of the streetlights, and Maintenance of Street Lights (596) is the actual repair of the street light assembly. These have been separate lines items, but we plan to combine them next year. Mr. Jaffari noted that the LED replacement program (a Capital Project) is going very well. We have replaced almost 2/3 of the streetlights. Mr. Kelly asked (based on the 2/3 completed) if there has been any early failure of the lights? Thus far (per Mr. Jaffari), there have not been any failures. However, it is new technology. Chair Hooper noted, that we could expect that streetlight expense to go down with the installation of the LED lights. Maintenance of the Lines UG has gone up due to some challenges in this area. There are old subdivisions that should have been maintained, and they are now experiencing troubles. We have started a program to upgrade and address those failures to hopefully prevent any further failure. The overall increase to Operations and Maintenance Expense is 1.74%, which is modest and appropriate.

Moving to General and Administration Expenses, which includes labor (regular and overtime) as well as department expenses, Mr. Jaffari noted that union contracts have been ratified, and the retroactive increases have impacted the labor expense. Of note, Customer Collections includes the new hires for IT billing. Administrative and General Salaries is down due to attrition. Office Supplies includes credit card fees associated with customer payments (per FERC regulations). Outside Services includes legal fees and consulting fees. Maintenance of General Plant (including software, website, GPS, SCADA system, engineering software, etc.) is up, which reflects improved automation efficiencies. The total for Maintenance Expenses reflects an overall increase of 3.7%.

Mr. Jaffari continued with review *of Other Operating Expenses,* which shows an overall increase of approximately 5%. *Operating Income* (revenue minus expense) is up 3.5%. Mr. Jaffari then reviewed the *Non-Operating Revenues (Expenses)*. Overall, the

total *Non-Operating Revenues (Expenses)* is up by 0.73%. *Net Income* is up by 4.56%, and the Return on Revenue (or ROI) overall is 7.75%, which is slightly below the 8% allowed.

4. Proposed Rate Adjustment – J. Parenteau, Director of Integrated Resources and M. Seavey, Principal, PLM
Presentation Slides: Electric Rate Design Scenarios (dated April 12, 2017)

Mr. Mayhew Seavey was present to review the results of the Cost of Service (COS) Study and to present alternate rate scenarios. The Cost of Service Model (prepared for FY16) was updated to prove that the model was correctly generating revenues and comparing them to expenses. Assumptions used for the COS model are outlined on Slide 2. Mr. Seavey noted that the municipal street lights rate is a flow-through of certain expenses as spelled out in Chapter 164 and cannot be adjusted. The results (Slide 3) show the rate of return that each customer class earns, and an overall rate of return at 7.9%. As illustrated, the rates of return vary widely between classes, but they are still in the same range that they were in three years ago, and are within the range of other Massachusetts municipal utilities. Mr. Seavey noted that over the years he has done rate designs for about three-quarters of the municipal utilities in Massachusetts and they are all fairly similar; you have a low or slightly negative rate of return on residential rates, and a fairly high rate on commercial, lower on industrial.

Mr. Seavey then reviewed Slides 5 and 6 – Issues of Subsidies in RMLD's Rates. Subsidies are inevitable in retail electric rates. Rates seldom if ever reflect the actual cost of providing service to every customer. The cost of energy varies every hour of the day all year long and yet you are charging customers a rate that varies at most twice a day over the course of the entire year. Capacity and transmission costs are based on demand during the peak hour (every year for capacity or every month for transmission). Most customers don't pay a demand charge – they are paying a flat, cents per kilowatt hour charge. With all those costs, you have one group of customers who ends up subsidizing another because they happen to have a peak demand during that one peak hour or they happen to not have much demand during those hours. The customers that do pay a demand charge are paying a demand charge based on their highest demand during the month, not what their demand is during that peak hour. Therefore, the rates are inexact. There are additional inherent subsidies because the cost of providing distribution service to any customer depends largely on the voltage that the customer is being served at, and where the customer is located on the system. Until something changes (in technology, etc.) this will continue. Mr. Seavey then discussed the political considerations that get reflected in the rate design.

Mr. Seavey reviewed both cross-class and intra-class subsidies that are addressed within the rate design (Slide 7). Mr. Seavey noted renewable generation (solar net metering) subsidies are becoming increasingly more sensitive for municipal utilities. There is a lot of attention being paid to reducing or eliminating these subsidies.

Intra-class subsidies are where one group of customers within a customer class are subsidizing others. In particular, the demand charges that customers are paying do not reflect the actual cost of distribution, capacity and transmission. Capacity and transmission, have been going up much faster than other costs over the last few years. Customers who use a lot of kilowatt hours relative to the maximum demand that they put on the system are paying more than their share of those capacity and transmission costs because they are paying through a kilowatt hour charge rather than a demand charge. Getting those demand charges accurately reflected in the rates has the added disadvantage that it doesn't provide a current price signal to customers to provide an incentive to control their demand during peak periods. We are trying to find ways that we can send that signal to the customers to cut their demand during peak periods.

Mr. Seavey reviewed three different rate design scenarios to address cross-class subsidies (Slide 8), all of which would produce the same overall revenue: (1) rates that uniformly increase rates by 4% (what RMLD has usually done in the past); (2) rates that will produce an 8% rate of return from each class; and (3) a refinement – designing residential rates that will at least breakeven and then have the other classes be equal.

Slides 9-14 displays in rough terms what happens under each scenario. Scenario 1 (Slides 9-10) is a 4% across the board increase in the base rates. We end up with an increase in the total bill of about 1% (capacity and transmission, and fuel, etc. are the same). The only thing that that is really increasing are the distribution costs. The rate impact is pretty uniform for all classes. Mr. Seavey reviewed how these rates compared with National Grid's current rates (as of April 1st of this year). All of the rates are competitive (in all scenarios) and so competitiveness is not a huge factor.

Scenario 2 (Slide 11-12) equalizes the rates of return so that each class earns an 8% rate of return. Mr. Seavey reviewed the impact of this scenario on each class. This would result in a significant shift in revenues between residential, commercial and industrial.

Scenario 3 (Slides 13-14) is more moderate. The residential rate of return goes to zero (breakeven). No body, except the Residential TOU, is looking at any change in their bill greater than 4%. The rule of thumb in retail rate-making is that customers don't notice a change of less than 10% and a change of less than 5% is truly in the level of noise.

Mr. Seavey then presented information relative to Intra-Class Subsidies looking solely at industrial class as an example. (slides 15-19). Currently, purchase power, capacity and transmission costs (PPCTC) are being recovered through a flat cents-per-kilowatt-hour charge that is the same for all customers. With the present rate, the total demand charge varies between $7.48 and $8.94 per kw for classes that pay a demand charge. In FY18, forward capacity and transmission costs (combined) are estimated at just under $16 per kilowatt. The $8 isn't recovering anywhere near the full cost of capacity and transmission, never mind the distribution cost. The $7-8 accurately reflects distribution cost, but you need to add another $16 (bringing it to $23-24) per kw to actually reflect the cost of demand. As noted earlier, high load factor customers (those using a lot of kilowatt hours relative to their peak demand) are paying more than their share of the capacity and transmission costs. Slide 16 includes a graph that shows how this plays out with current customers. There is a direct linear correlation between the number of hours that a customer is using its demand every month and what percentage of his demand costs is going to subsidize someone else or being subsidized by someone else.

The proposed approach to eliminate or reduce these subsidies (slide 17) would include a demand charge that reflects the combined cost of capacity and transmission, and then recover the rest of the cost through an energy charge. We will not shift revenues from one class to another. We are just going to look at, if those three classes had paid the approximate $0.055 cents, this is how much revenue we would have collected – lets convert that into a demand charge and collect anything else through a kilowatt hour charge; the impact will be this many dollars to half the customers and a reduction to the other half of the customers. Two-thirds of customers are going to see an increase, although only five of those customers would see an increase greater than 10%. Customers that are looking at decreases are looking at decreases of more than 5% because you see a lot of customers with high load factors that are using a lot of kilowatt hours – they are not seeing a big decrease in percentage in their bill.

Mr. Seavey opened the discussion to questions. Mr. Kelley noted that over the past three years there have been increases (approximately 4% annually), and questioned the overall impact of these increases to customers over the last three years. Ms.

Parenteau responded that the previous philosophy was to whittle away at the rate of return until you were not earning a rate of return and then you had a very large (double digit) increase in order to recover that money. That provides less money for capital projects and to put back into the system. When Ms. O'Brien joined RMLD, the plan was to put in place small, more palatable increases, rather than waiting three years and requesting a 10-12% or 15% increase. RMLD has put a lot of maintenance programs in place; we've had a lot of catching up to do. As staff has been reporting, capacity and transmission costs are going up significantly and this is the year that it is going to hit. Power supply (80% of an average bill) is going up approximately 3.5% overall. We are trying to manage those rate increases so that we don't have huge spikes. That's the philosophy Ms. O'Brien has implemented since she came to RMLD in 2013. There were no additional questions.

Mr. Seavey began review of Renewable Generation (or solar net metering) rates (Slide 20). RMLD losses on average 30% of the distribution revenues that would be collected from solar customers because they are buying fewer kilowatt hours. However, those customers, are not using 30% less distribution service. They still have the same demand when the sun isn't shining that they had before, and when they export electricity out onto the grid they are using the RMLD distribution system. RMLD provides a service, and the customer isn't paying for it which is the basic problem. There are currently not a huge number of solar customers, but it is a concern over time that this could be an issue. There is a public perception issue that customers are not paying their fair share. Mr. Seavey then reviewed (Slide 21) a typical residential solar customer's load shape (over a 24-hour period). The area depicted in red is where RMLD is losing distribution revenue. Slide 22 shows a graph which depicts that the more solar electricity that's actually used behind the meter (not exported out to the system) the more the customer is avoiding distribution costs, and the more it's costing RMLD per kilowatt hour of installed solar capacity. The average loss ($3.16) actually reflects only half of the customers. With quite a few customers, RMLD is losing more than $3.

Mr. Kelley asked about solar customers that use time-of-use. Ms. Parenteau noted that approximately 5-10% of the 80 solar customers are on time-of-use metering. Customers have no concept of the value of the subsidizations for distribution charges, which makes it difficult for customers to determine break-even on their investment. RMLD is still a back-up system for that solar. Short of having these values for the subsidizations, more people may invest with that same mind-set. If the light department was to restructure the net metering so that we collect a demand component to recover those costs, customers would then be aware of the costs when making their investments. It is important that our rates are reflective of the actual charges to limit subsidization.

Mr. Seavey then reviewed Slide 23 which outlines three approaches to address the Renewable Generation Subsidy. (1) a fixed charge every month (per installed kw) for distribution service recovery. (2) meter those customers with a demand meter rather than just a kilowatt-hour meter. (3) separate the solar generator from the house meter and have two separate meters. This is often used just for commercial scale (anything over 100kw).

Mr. Seavey noted that it is important, in light of the improvements in the economies of battery storage, to address this now. If a customer wants to completely avoid paying RMLD for distribution, they need to disconnect from your system. Solar developers provide an economic analysis to customers. RMLD does not know what payback a customer has been led to expect from the solar installation, which may or may not reflect RMLD's actual rate structure. It is a matter of political sensitivity to change a rate for existing customers. For that reason, some utilities will grandfather existing customers when they change net metering rates; there is an implied contract – there

is a rate schedule that is not going to suddenly change and destroy the value of their investment. Mr. Seavey concluded his presentation.

Chair Hooper noted that it was a lot of information, and suggested that it may be valuable for the RMLD to share some of this information at the selectmen meetings so that they get a better understanding of how the rates are developed.

Ms. Parenteau noted that because the budget assumes certain revenue requirements, the operating budget, capital budget, and any proposed rate increase are presented as a package. The rate information presented here is preliminary and will be presented to the BOCs for their feedback. Staff will then fine tune the recommendation and return to the CAB with specific rate information. Ms. Parenteau noted that the operating and capital budget could be voted at this meeting with the assumption that the operating revenue will be collected in some way or shape through a rate filing in June for a July effective date.

Mr. Small made a motion that the Citizens' Advisory Board recommend to the RMLD Board of Commissioners the Fiscal Year 2018 Operating Budget with a Net Income of $4,114,622 as presented, seconded by Mr. Cohen. Hearing no further discussion, ***Motion carried 4:0:0*** (4 in favor, 0 opposed, 0 absent).

Mr. Small made a motion that the Citizens' Advisory Board recommend to the RMLD Board of Commissioners the Fiscal Year 2018 Capital Budget in the amount of $7,685,715 as presented on April 5, 2017. Any significant changes are to be submitted to the CAB for review and recommendation, seconded by Mr. Cohen. Hearing no further discussion, ***Motion carried 4:0:0*** (4 in favor, 0 opposed, 0 absent).

5. Public Comment – G. Hooper, Chair
   Chair Hooper noted that there was no public present. Mr. Kelley suggested the CAB consider voting a new Vice Chair to fill the vacant position. This will be added to the Agenda for an upcoming meeting. Mr. Kelley asked about the upcoming solar facility tour and questioned why it had not been scheduled for one of the RMLD facilities (RMLD generation). Ms. Parenteau noted that the solar facilities are similar other than the size. To accommodate safety and ease of access to the roof, the tour was scheduled for the Teradyne facility. The tour is scheduled for May 16th.

6. Next Meeting – G. Hooper, Chair
   The next meeting of the CAB was scheduled for Wednesday, May 3rd.

7. Adjournment – G. Hooper, Chair
   Mr. Kelley made a motion to adjourn the Citizens' Advisory Board meeting, seconded by Mr. Cohen. Hearing no further discussion, **Motion carried 4:0:0** (4 in favor, 0 opposed, 0 absent).

The Citizens' Advisory Board Meeting adjourned at 7:47 PM.

As approved October 25, 2017.

Electric Rate Design Scenarios

A Presentation to the

Reading Municipal Light Department

April 12, 2017

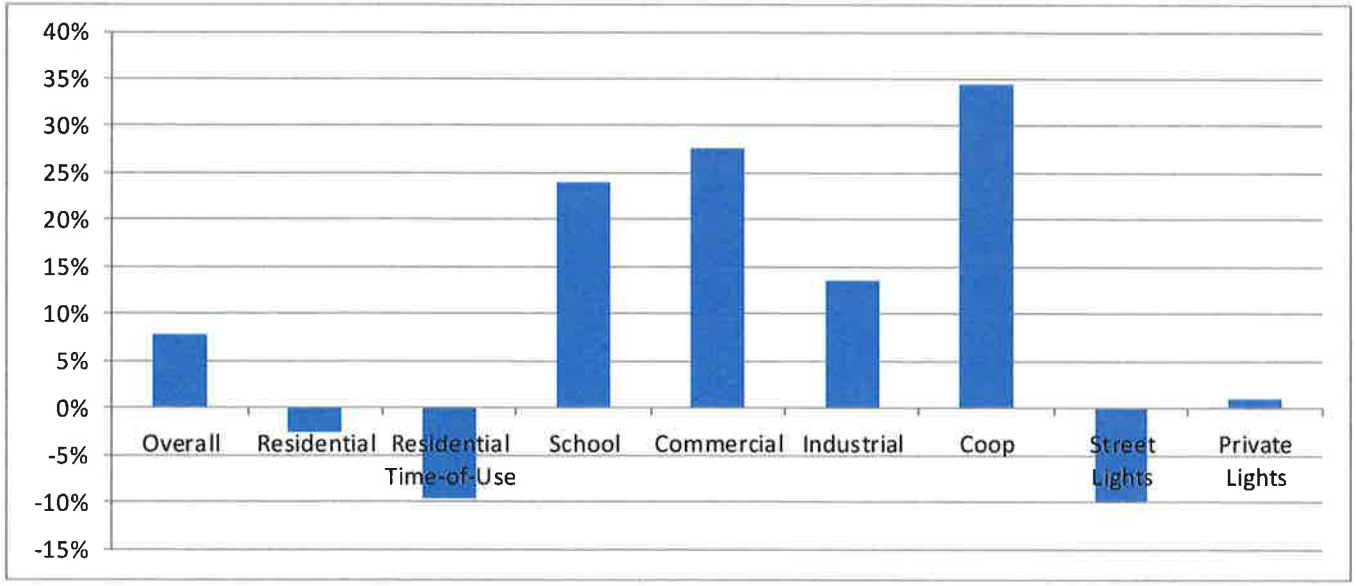
PLM Electric Power Engineering

FY18 Cost of Service Assumptions

- Used FY16 cost of service model as the base
- Sales kept flat at of 672 million kWh
- O&M from RMLD FY18 budget
- Plant increased to $79 million
- Customer and distribution charges increased by 4%
- Municipal street lights billed at $0.13861

FY18 Cost of Service Results

DESCRIPTION	FY18 Test Year Total	Residential A	Residential Time-of-Use A-2	School SCH	Commercial C	Industrial I	Coop COOP	Lighting Municipal Street	Lighting Private Area Lights
TOTAL ANNUAL REVENUES	97,811,030	39,143,692	662,010	2,097,137	29,323,754	25,670,440	465,143	344,056	104,798
TOTAL ANNUAL EXPENSES	91,551,366	40,233,432	729,846	1,792,054	24,326,487	23,479,965	374,057	513,102	102,424
RETURN (NET INCOME)	6,259,664	-1,089,740	-67,836	305,083	4,997,267	2,190,476	91,087	-169,046	2,374
TOTAL NET PLANT, JUN 30	79,119,000	40,622,268	704,232	1,271,407	18,123,155	16,177,139	264,851	1,695,890	260,058
RATE OF RETURN	7.9	-2.7	-9.6	24.0	27.6	13.5	34.4	-10.0	0.9



FY18 Cost of Service Results

- Overall rate of return 7.9%
- Class rates of return vary from minus 10% to plus 28%
- Rates of return are comparable to the FY13 cost of service study
- Relative rates of return are within the range seen from other Massachusetts municipal utilities.

Issue of Subsidies in RMLD's Rates

Subsidies are inevitable in retail electric rates

- Rates can seldom reflect the actual cost of service to every customer
  - Energy costs vary hourly
    - Energy rates reflect at most two groups of hours, on-peak and off-peak
  - Capacity and transmission costs are set based on demand during the peak hour of every year (capacity) or month (transmission)
    - Most customers do not even pay a demand charge
    - Those that do typically pay a rate based on the customer's peak, not their demand during the regional peak hour
  - Distribution costs vary depending on where a customer is located on the distribution system
    - Rates are based on the average cost of the entire network

Issue of Subsidies in RMLD's Rates

Political considerations are reflected in rate levels

- Residential customers are favored by both municipal and private utilities
  - Residents of municipal systems usually elect the Municipal Light Board members
  - The Attorney General often represents the residential customers of private utilities in rate cases, putting downward pressure on residential rates
- Large customers are more sensitive to competitive price pressure and are more able to move their operations to shop for lower electricity prices
  - Municipal utilities also tend to view large customers as employers for residents and therefore require less net income from them

Two Types of Subsidies to Address in Rate Design

- Cross-Class Subsidies
  - Residential rates do not even recover expenses
  - Commercial and Industrial rates produce all of the net income and subsidize the residential customers
  - Renewable Generation rates do not recover much of the cost of providing distribution service to customers who take service under those rates
- Intra-Class Subsidies
  - Demand charges do not reflect the actual cost of distribution, capacity and transmission expenses, all of which are demand-related
  - High-load factor customers subsidize low-load factor customers
  - Has the added disadvantage of not providing adequate incentive to customers to control demand during peak periods

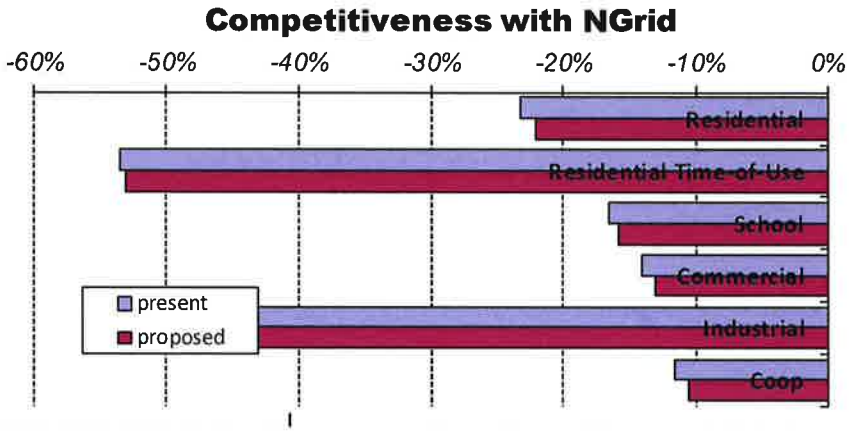
Alternative Rate Design Scenarios To Address Cross-Class Subsidies

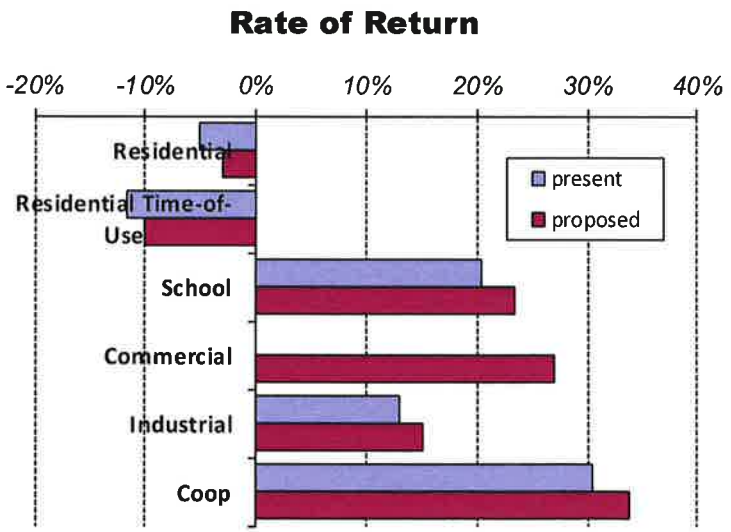
All scenarios were designed to produce an overall 8% rate of return

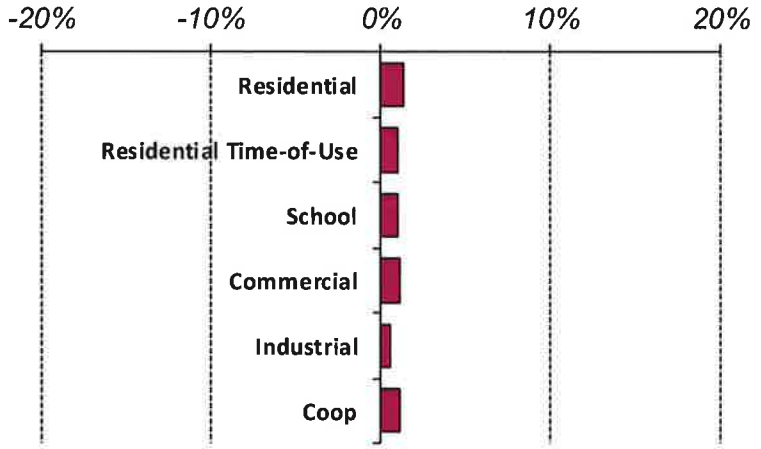
1. Design rates that will provide an equal percent increase to all classes of customer
2. Design all rates to produce the same rate of return, approximately 8%
3. Design residential rates that produce a 0% rate of return, with all other rate classes producing rates of return equal to each other

Scenario 1:
Equal Percentage Increase

	Rate of Return	Revenue Change		RMLD vs. NGrid
	(%)	($000)	(%)	(%)
Residential	-3.0%	$533	1.4%	-22.1%
Residential Time-of-Use	-10.0%	6	1.0%	-53.1%
School	23.4%	20	1.0%	-15.8%
Commercial	27.0%	320	1.1%	-13.1%
Industrial	15.1%	131	0.5%	-53.9%
Coop	33.8%	5	1.2%	-10.6%
TOTALS	7.9%	$1,016	1.1%	-32.5%





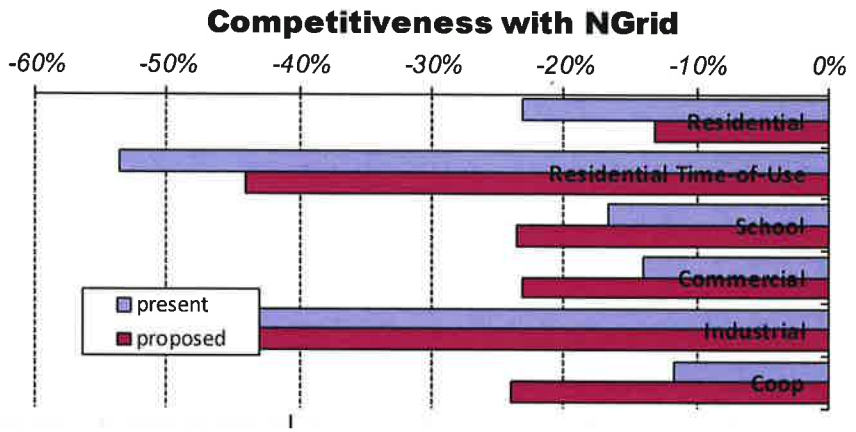


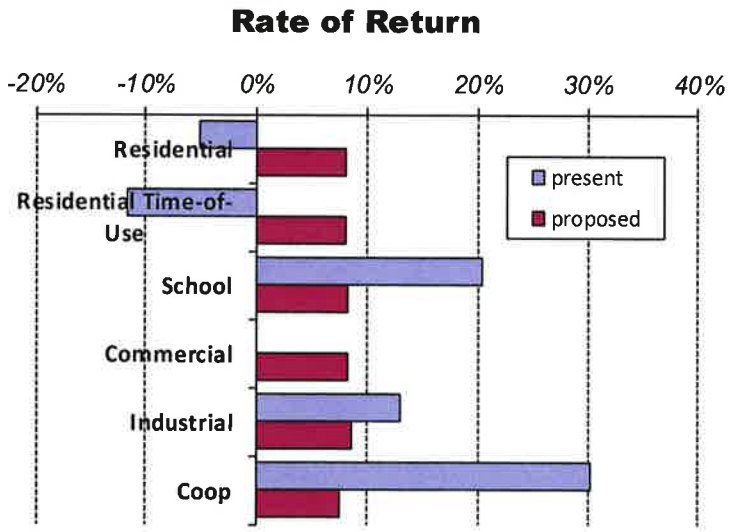
Scenario 1:
Equal Percentage Increase

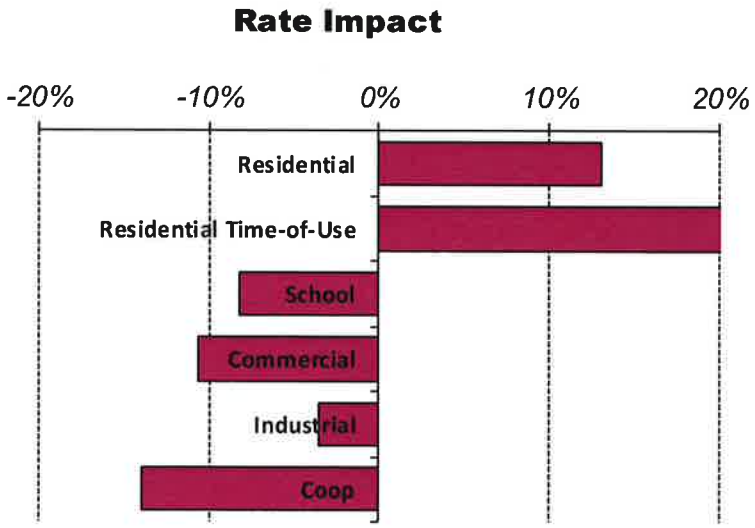
- Overall revenue increase is $1 million
- All classes base rates increased by 4%
  - Net bill increase averages 1%
- Rates of return remain uneven
  - Residential rates lose $1.3 million in net income
  - Commercial and Industrial customers pay over $7 million

Scenario 2:
Equal Rates of Return

	Rate of Return	Revenue Change		RMLD vs. NGrid
	(%)	($000)	(%)	(%)
Residential	8.1%	$5,001	13.1%	-13.1%
Residential Time-of-Use	8.0%	132	20.3%	-44.1%
School	8.2%	(170)	-8.3%	-23.5%
Commercial	8.2%	(3,033)	-10.6%	-23.2%
Industrial	8.5%	(920)	-3.6%	-55.8%
Coop	7.6%	(63)	-13.9%	-24.0%
TOTALS	7.8%	$947	1.0%	-32.6%





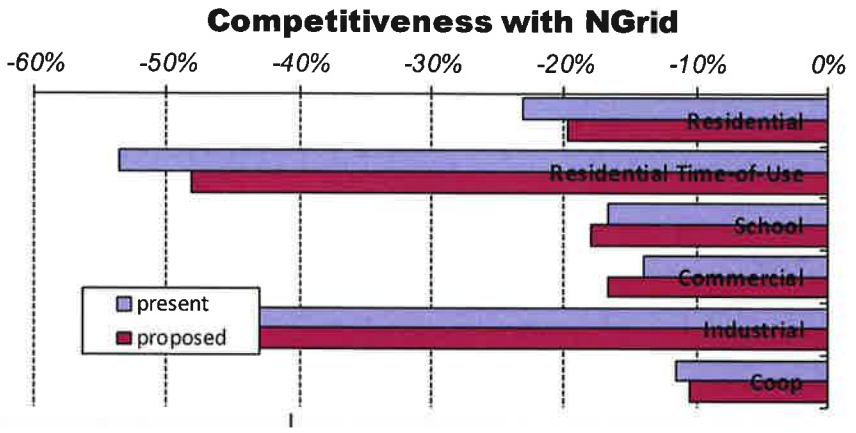


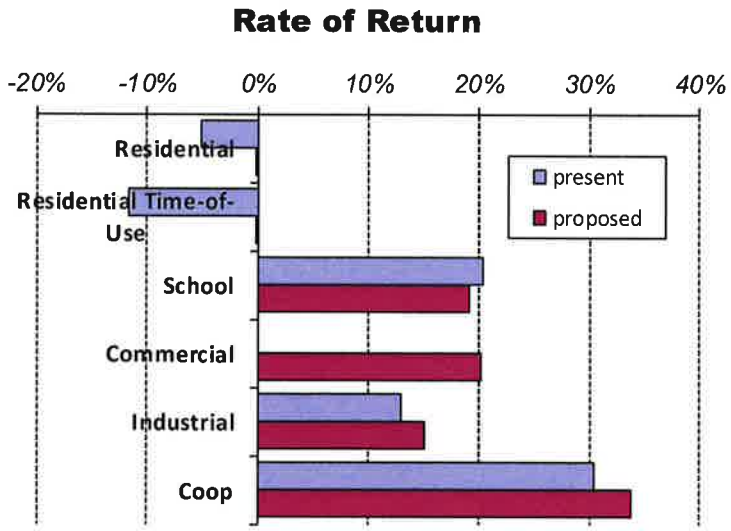
Scenario 2:
Equal Rates of Return

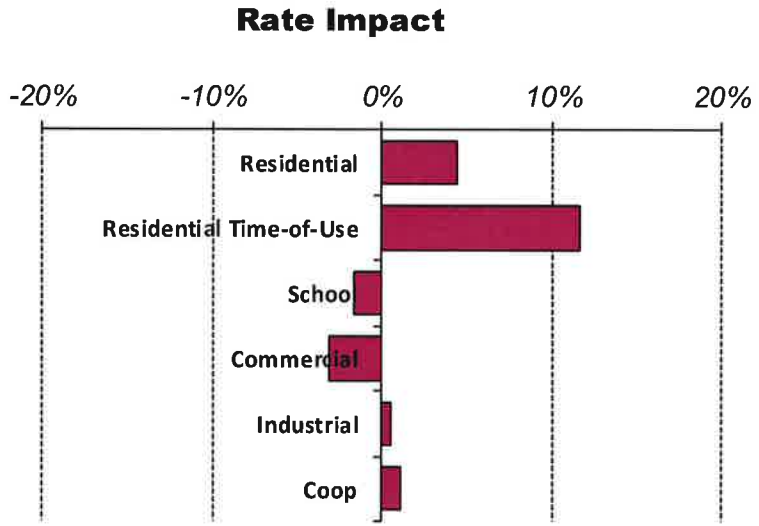
- Overall revenue increase is $1 million
- Each class produces an 8% return on equity
- Average rate increase is 1%
  - Residential increase is 13% or $5 million
  - Commercial reduction is 11% or $3 million
  - Industrial reduction is 4% or $1 million

Scenario 3:
Residential Classes 0% Rate of Return
All Others Equal Rates of Return

	Rate of Return	Revenue Change		RMLD vs. NGrid
	(%)	($000)	(%)	(%)
Residential	-0.1%	$1,691	4.4%	-19.8%
Residential Time-of-Use	-0.1%	75	11.6%	-48.2%
School	19.1%	(33)	-1.6%	-18.0%
Commercial	20.3%	(880)	-3.1%	-16.7%
Industrial	15.1%	131	0.5%	-53.9%
Coop	33.8%	5	1.2%	-10.6%
TOTALS	7.9%	$990	1.0%	-32.6%







Scenario 3:
Residential Classes 0% Rate of Return
All Others Equal Rates of Return

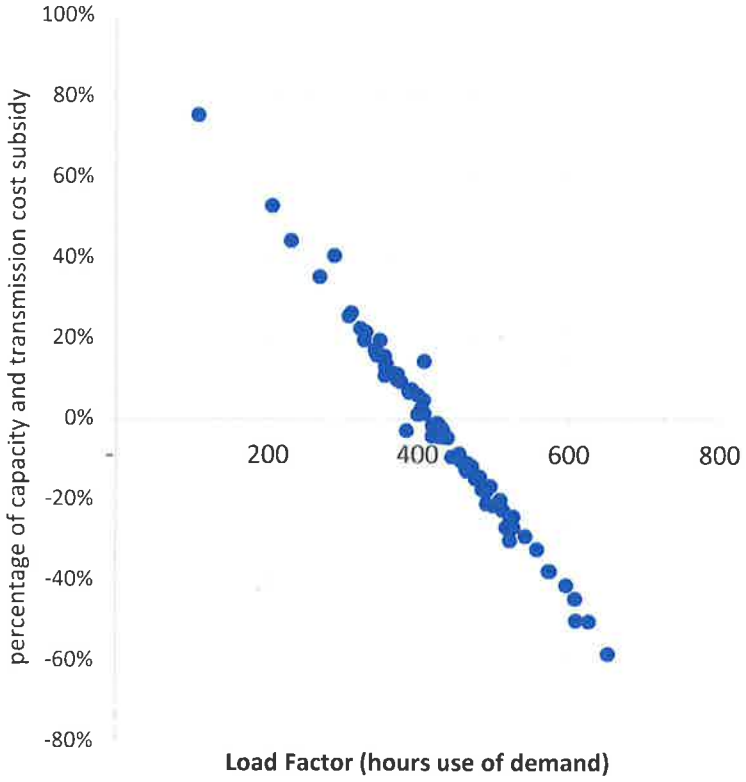
- Overall revenue increase is $1 million
- Average rate increase is 1%
  - Residential increase is 4% or $1.7 million
  - Commercial reduction is 3% or $0.9 million
  - Industrial increase is 0.5% or $130 thousand

Alternative Rate Design Scenarios To Address Intra-Class Subsidies

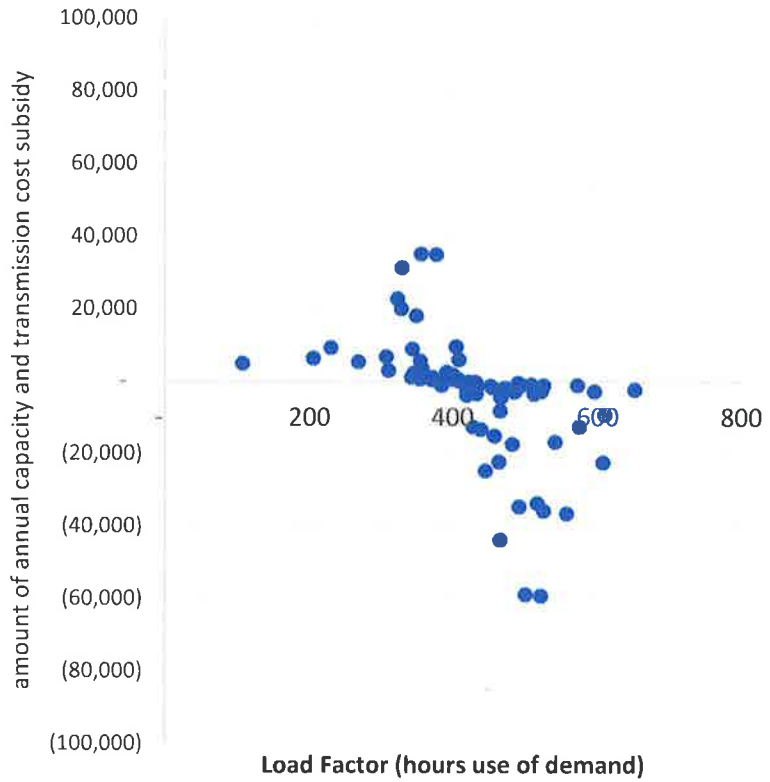
- Present rate charges a demand charge only for distribution service to Commercial, Industrial and School customers
  - Rate varies between $7.48 and $8.94 per kW
- In FY18 Forward Capacity and Transmission costs will total almost $16 per kW
- All capacity and transmission costs are recovered through a flat cents per kWh charge that is the same for all customers
- Customers who use a lot of kWh relative to their peak demand (high load factor) are paying more than their share of capacity and transmission costs

Industrial Rate - Subsidization of Capacity and Transmission Cost

Percent



Dollars per Year

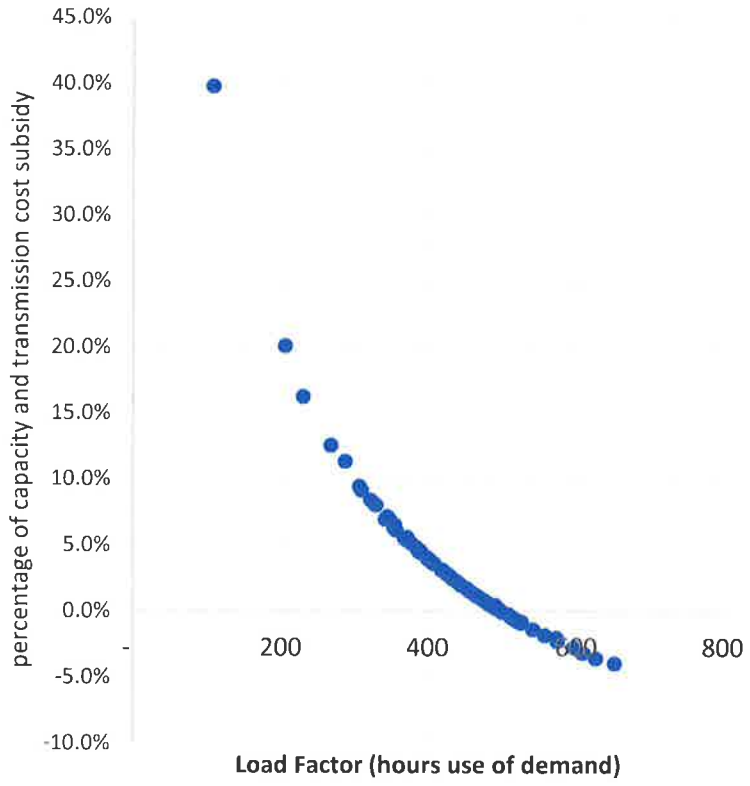


Proposed Approach to Reducing or Eliminating this Subsidy

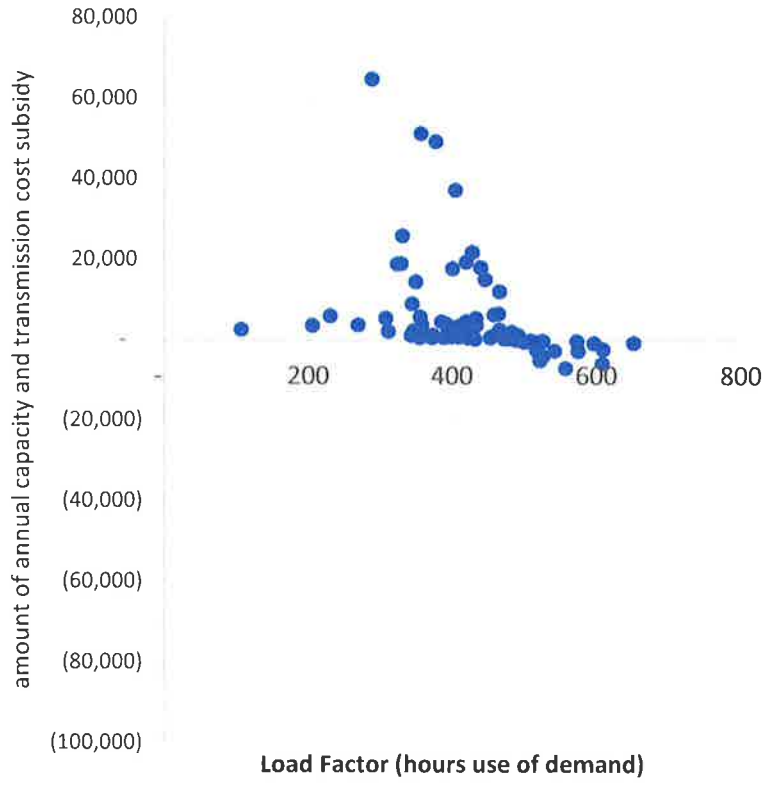
- Create a separate Purchase Power Capacity and Transmission Charge (PPCTC) for demand-billed customers
  - A demand component that reflects the combined cost of Forward Capacity and Regional Network transmission charges
  - An energy component that recovers the remaining revenues that the PPCTC charges to all other customers would have recovered
- No shift of revenues from one class to another, only from high load factor customers to low load factor customers.

Impact of Shifting Capacity and Transmission Costs to Demand Charge

Percent



Dollars per Year



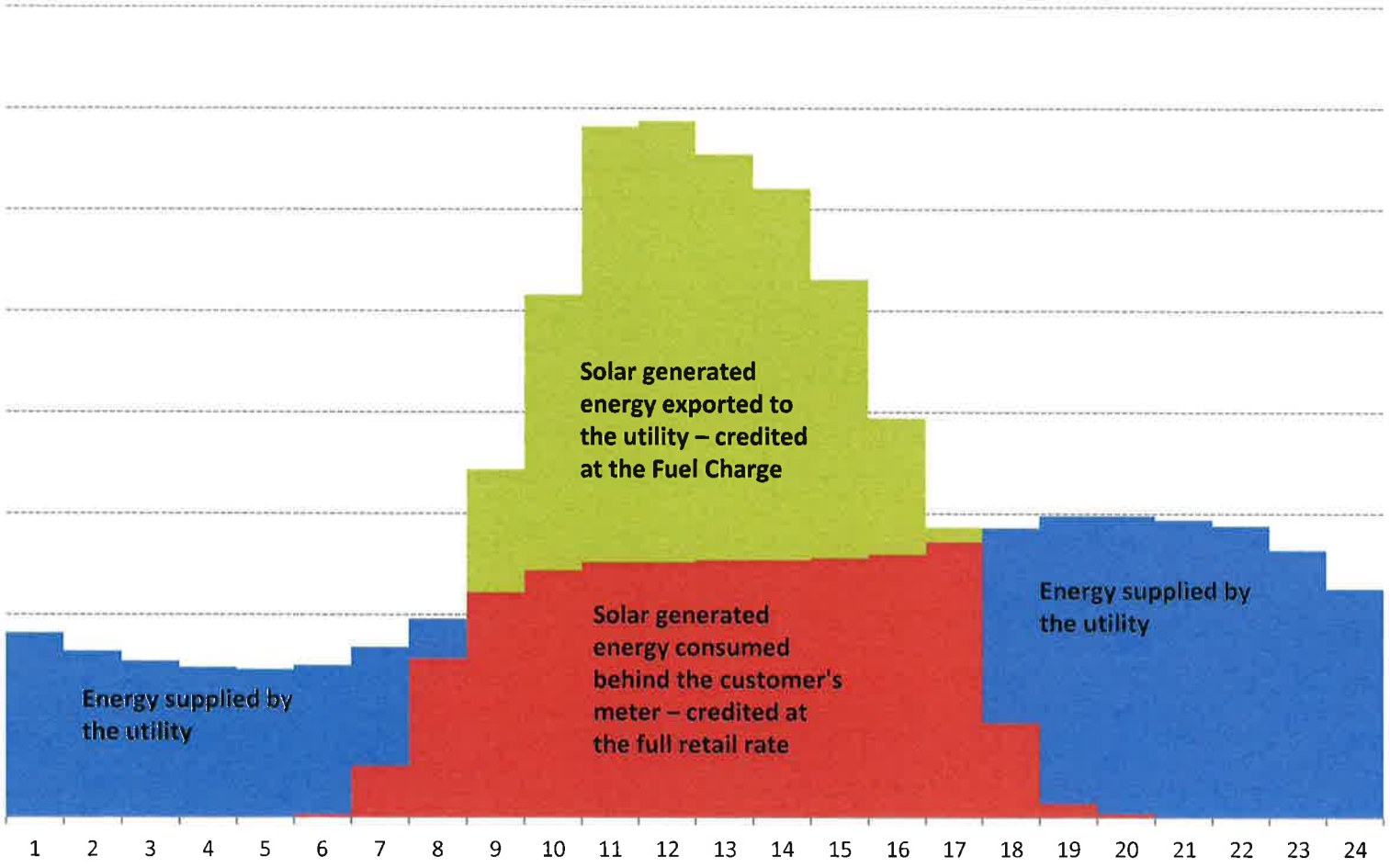
Impact of Shifting Capacity and Transmission Costs to Demand Charge

- Two thirds of Industrial Customers would see an increase in their cost of electricity
- Only five customers would see an increase greater than 10%
- None of the decreases would be greater than 5%
  - Customers seeing decreases are high load factor customers using a lot of kWh
  - Customers seeing increases tend to be smaller, low load factor customers using fewer kWh

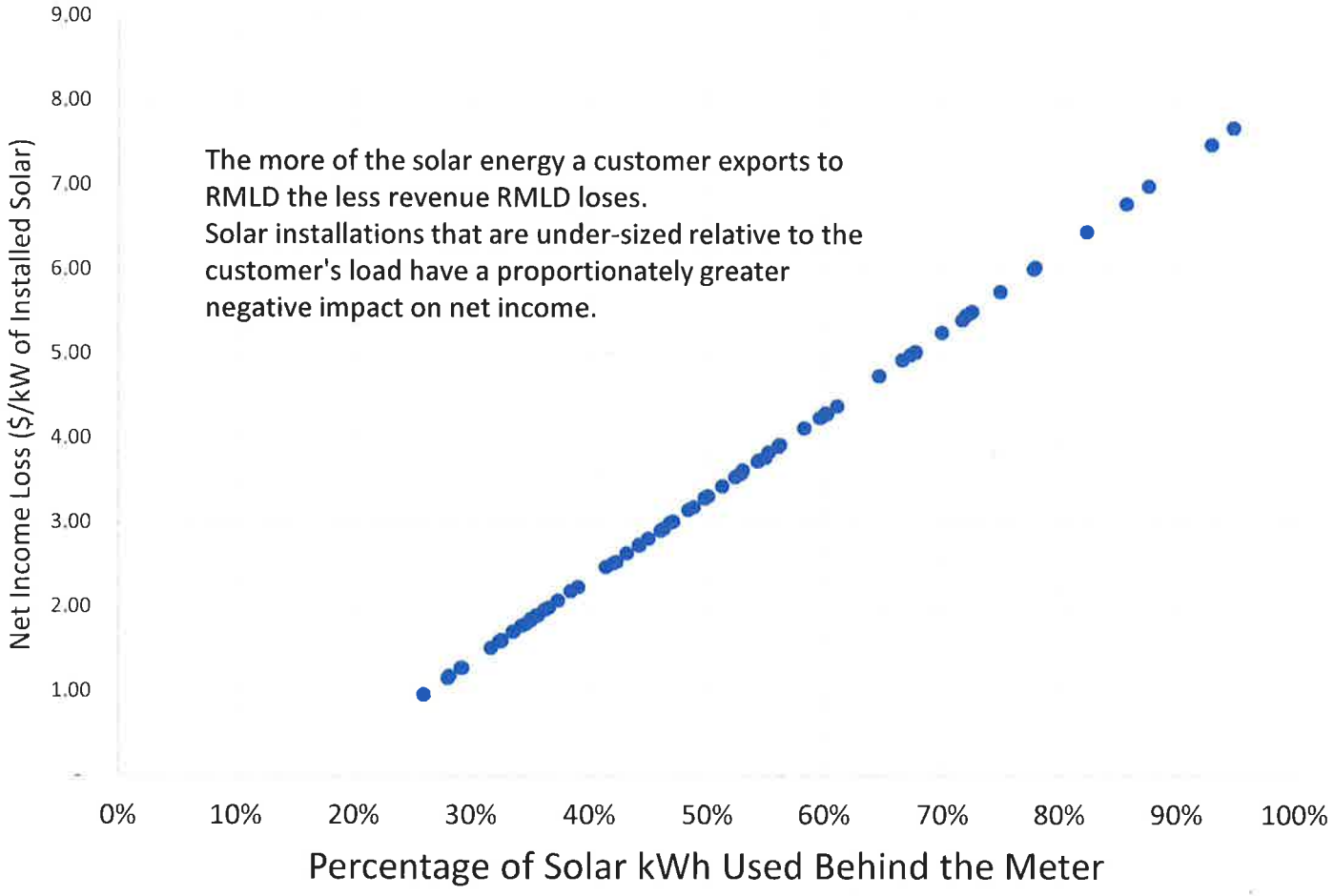
Subsidization Under Present Renewable Generation Rate

- Present rate allows customer to avoid paying a distribution charge for all kWh that are produced by their solar generator and consumed on the customer's premises
  - The percentage of distribution charges avoided varies with the size of the solar installation but averages over 30% of total distribution revenue lost per customer
- RMLD loses an average of $3.16 per installed kW of solar capacity each month in distribution revenue
  - Total monthly subsidy is estimated at $1,800 across approximately 80 customers, an average subsidy of $22 per customer.
  - This is mitigated by the fact that payment for energy exported by the solar customer is at the Fuel Charge, which is less than the avoided energy, capacity and transmission value of the solar generation

How a Solar Customer Looks to RMLD Metering



Lost Revenue vs Solar Utilization



The more of the solar energy a customer exports to RMLD the less revenue RMLD loses.
Solar installations that are under-sized relative to the customer's load have a proportionately greater negative impact on net income.

Options for Reducing the Renewable Generation Subsidy

- Add a Distribution Recovery Charge of $x.xx per kW of installed solar capacity each month to recover the lost distribution revenue
  - This is not ideal since, as the previous graph shows, the actual lost revenue per kW varies widely from one customer to another.
  - Simple to administer with existing metering and billing system
  - This approach has been adopted by many public power systems
- Install demand meters on all customers with renewable generation and bill their distribution service on a demand rather than energy basis
  - Solar generation does not significantly reduce the maximum demand that a customer places on the distribution system
  - Requires new and more expensive metering and billing solutions
- Separate the metering and billing of distribution service and renewable generation supply
  - Bill the customer for 100% of the electricity consumed on the customer's premises at the normal retail rate
  - Credit the customer for 100% of the energy generated by the facility at a Renewable Generation Buyback tariff rate
  - Most complete and accurate way of eliminating the subsidy
  - Requires new and more complicated metering and billing solutions

Questions?