



ALLOCATED COST OF SERVICE STUDY

Bar Harbor Public Works Department - Water Division

Executive Summary

The Town of Bar Harbor's Water Division ("BHWD") hired La Capra Associates in 2011 to develop a fully allocated cost-of-service ("FACOS") study. As part of the study, La Capra Associates was also asked to review the Division's existing rate structure and recommend a new rate design. The cost-of-service study also satisfies an outstanding request to conduct such a study by the Maine Public Utilities Commission ("PUC") when the Town of Bar Harbor purchased the Bar Harbor Water Company in 2001.

La Capra Associates performed a FACOS study to determine the overall level of revenue responsibility for each of Bar Harbor Water Division's customer classes (Residential, Commercial, Industrial, Public Authority, Public Fire, Private Fire). Developing a FACOS study first requires that a utility develop a revenue requirement. The total annual cost of providing water service is the utility's revenue requirement, the majority of which is usually generated through water sales to its customers.

La Capra Associates used the Base-Extra Capacity¹ method of cost allocation as recommended by the American Water Works Association M1 Manual of Water Supply Practices.² This method is employed by both private and municipal water utilities for determining class revenue requirements, and the PUC is both familiar with and has approved the use of this method.

The FACOS study used the most recent cost and account data available, for calendar year 2011. In BWHD's last rate filing, the Public Utilities Commission approved a total revenue

¹ See Glossary

² "Principles of Water Rates, Fees and Charges," Fifth Edition (2000), American Water Works Association

requirement of \$1,489,542 to be collected in 2011 rates. Actual rate revenue collected in 2011 totaled \$1,499,407, just 0.7% above the rate filing projection. Therefore, \$1,499,407 was the allocated revenue requirement used in the FACOS study.

In addition to Bar Harbor Water Division's actual customer data, the Base-Extra Capacity FACOS model requires the input of estimated *capacity factors* for each customer class.³ Capacity factors represent the "*maximum-use-to-the-average-use*" on a daily and hourly basis for each customer class. The pattern typically seen in water systems is that the Residential class has the highest capacity factors, followed by the Commercial and then the Industrial classes. This is typically due to summertime uses such as lawn irrigation leading to higher peak-demand requirements, relative to average demand, compared to a typical industrial user which may use high volumes, but on a relatively uniform basis throughout the year. In many cases, cost-of-service studies borrow capacity factor estimates from similar systems, but La Capra Associates found that borrowed data understated BHWD's peak class loads and did not adequately reflect class usage patterns. Based on the Division's number of unique customers and class characteristics, BHWD conducted a three-month study of its own customer class' usage, focusing on peak season consumption.

The study results showed that the Division's Commercial users, particularly seasonal Commercial users, actually have the highest capacity factors. Furthermore, the Jackson Lab, which is the only industrial customer, had actual capacity factors only slightly different than Residential users. While these results are not typical, they are also not surprising given the makeup of BHWD's customer base. Many of the large commercial users are hotels. In addition to mimicking Residential class daily usage profiles (early morning/late day showering), many of these users also have swimming pools and lawn irrigation, causing usage to rise during the peak summer months and adding to system load. Kebo Valley golf course, which is classified as a commercial customer, also has significant summer lawn irrigation use particularly during dry summers. Due to the nature of Jackson Lab's business, its water use also increases during the

³ See Glossary

warmer summer months. Importantly, these results do not support the declining block structure which Bar Harbor currently has in place.

The table below presents the FACOS study results. As shown, the Residential, Commercial and Public Authority classes currently contribute more rate revenue than their cost-of-service, while the Industrial class (Jackson Lab) and Private Fire charges contribute less than their cost of service.

Class	2011		Allocated COSS		\$ Change from 2011	% change from 2011
	Actual	% of Total	COS	% of Total		
RES	\$ 433,721	28.9%	\$ 376,731	25.1%	\$ (56,990)	-13.1%
COM	\$ 419,435	28.0%	\$ 390,689	26.1%	\$ (28,746)	-6.9%
IND-LAB	\$ 105,520	7.0%	\$ 127,391	8.5%	\$ 21,871	20.7%
PA	\$ 50,060	3.3%	\$ 44,550	3.0%	\$ (5,510)	-11.0%
PUB Fire	\$ 402,968	26.9%	\$ 402,524	26.8%	\$ (444)	-0.1%
PRIV Fire	\$ 87,703	5.8%	\$ 157,523	10.5%	\$ 69,820	79.6%
Total	\$ 1,499,407	100.0%	\$ 1,499,407	100%	\$ 0	0.0%

When the FACOS study was completed, La Capra Associates reviewed BHWD’s rate design and recommended changes to achieve administrative simplicity, better customer understanding, and better pricing signals reflecting a more fair distribution of costs. When developing rates it is important to allocate costs to the rate classes that cause those costs to be incurred. However, there are other considerations that are important when developing rates such as minimizing rate and bill shocks to the existing rate classes while providing price signals to meet policy goals. Often these three rate design considerations conflict with each other and require some judgment to find a balance among them.

“Full” cost-of-service rates were developed where cost causation was the only rate design goal considered. Immediately instituting rates based on the results of the FACOS study (referred to as “overnight rate transition”) is problematic as some customers would experience unacceptable bill impacts. Instead, full cost-of-service rates were developed as a reference point to start from; final rates move toward this result, but gradually, to minimize bill impacts.

Developing a rate design that balances rate impacts and still reflects cost causation is the ultimate goal. Additionally, the rate design should include a simplified rate structure. The current rate structure features a rate that declines as the level of consumption increases, and minimum meter charges that include varying amounts of water allowances. To accomplish both fairness and simplicity in its rates, we recommend BHWD move, over time, to a uniform rate for water consumption (i.e. elimination of declining blocks) and an equivalent, modest water allowance for all meter sizes. These rate design changes would ease customer understanding, simplify the billing process and send effective price signals to customers. Starting with the elimination of one or more rate blocks and then moving towards a uniform rate over time would offer a balance between sending appropriate price signals and minimizing customer impacts.

In addition to our recommendation of a phased-in approach for the new rate design, we also recommend that BHWD retain separate tariffs for Quarterly and Seasonal customers based on the FACOS study results. Ultimately, the rates adopted should be expected to collect revenues that are reasonably close to the FACOS study results, but will not likely be exact because rates are based on meter size and water usage, and are not customer class differentiated except by billing type (i.e. quarterly vs. seasonal).

The FACOS study report outlines the impact of two scenarios, an *Overnight Transition to Uniform Rates*, and a three-step *Rate Transition Phase-in* which would occur over a number of years. The report and the corresponding appendices discuss the impacts of both the overnight transition and the phased-in scenarios. Ultimately, it will be up to the Bar Harbor Water Division and the Town Council to determine if the overnight transition or the phased-in approach is the most appropriate method to pursue.