

EXHIBIT "I-9"
PART K

Supply Options

FIGURE 5-48. Initial Twenty Year Project List - Continued

Year Project	Phase	Project Description	Budget	Antic Capacity GPM	24 Hrs	16 Hrs	Avg Day Capacity	Effective Source Addition	Assumed Pumping in '96 Model	Comment
Windward Wells at Kauiki - Incremental	Transmission	Install roughly 15,000' of pipeline to connect well to system.	1,760,800	600	864,000	576,000	384,000	300,000	No	Leeward aquifer would have been developed, with only 77,912 additional source available from No this well if a resource reserve is maintained.
Supply and Demand Side Management Projects										
Direct Install / Rebate of Toilets and Other Efficient Fixtures for Residences, Hotels and Others			1,480,419					100,000		These projects are not capitalized. However, they would add to expenses needing to be recovered, so are added here. Assumes replacement of all non-conserving toilets and other fixtures. These projects plus the hypalon cover and replacement of Palawai Grid line below combine to an estimated 465,000 GPD in blow.
Incentive Program for Hotel and Landscape Customers			225,000					15,000		
Leak Detection & Water Audit Program - Equipment			150,000					43,000		
Landscape Conservation Program			675,000					111,000		
Portion of Watershed Fence Project - For Third Increment Only			3,000,000							
Storage Projects										
Replace Hii 1 0.5 MG Tank & Line Hii Reservoir OR		Replace 0.5 MG Hii Tank and re-line 1 MG Hii reservoir								* Not selected per discussions w/utility. Cost would be \$1,415 million.
Replace Hii 1 Tank & Reservoir with 2 MG Tank		Replace 0.5 MG Hii tank and 1 MG Hii reservoir with 2 MG	5,000,000							
Replace Kaunalapau Tank		Design & Construct tank to serve needs of Kaunalapau. Construct tank, appurtenances,	75,000							
2012 Hypalon Balls at 15 MG Brackish Res.		Install hypalon balls to reduce evaporative losses at 15 MG	495,000					14,000		Estimated 14,000 GPD reduction in losses.
Line Replacement										
Replace Broken & Leaking Pipe in Central Palawai Irrigation Grid			3,740,920					202,000		Eliminating losses increases available capacity without additional strain to the aquifer. Levelized costs estimated based upon higher installation costs than are now shown, (\$3.84 million, assuming ductile iron pipe. This was the most cost-effective resource option even with the ductile iron pipe assumption.) Costs shown here involve high-pressure PVC.
Replace Asbestos-Concrete Pipe Segments in Lana 1 City & PRV on 10' Asbestos Line			972,041							
Upgrade Kaunalapau Line			3,958,217							
Connect Potable Kaunalapau Line to Miki Basin			878,062							
Connect Well 7 to Distribution Systems			697,842							
Replace Steel Segments in Lana 1 City			1,202,755							
Connect Well 7 to West End Grid			153,237							
Replace Old Pipe in West End of Palawai Irrigation Grid			342,947							
PRV Valve Above Miki Industrial			6,000							7 currently operating source pumps, plus 2 or 3 more likely to operate in near future, plus new source pumps for well s15 and 2b - a total of 12 source pumps w assumed lifetime of 15 years per pump. 200K for replacement 20 years
Replace Kaunalapau PRV			9,000							
Replace Hypalon Hii			9,000							
Replace North St. PRV			9,000							
Other PRV Replacement as Needed			9,000							
Pump Replacement										
Rolling Pump Replacement			2,400,000							Regular maintenance, assessment and replacement of parts such motors, electrical or other needs can help extend the life of pumps. Some annual budget is necessary to insure this. \$50 K per year for 20 years
Rolling Upgrades to Motor Control & Electrical Centers			1,000,000							

System Maintenance and Replacement Needs

FIGURE 5-48. Initial Twenty Year Project List - Continued

Year Project	Phase	Project Description	Budget	Antic Capacity GPM	24 Hrs	16 Hrs	Avg Day Capacity	Effective Source Addition	Assumed Pumping In '96 Model	Comment
		SCADA, Telemetry & Monitoring Needs Replacements & Upgrades	500,000							Contingency for telemetry or other system monitoring needs, such as large flow meters, etc. 25K per year over 20 years.
		ESTIMATED 20 YEAR SYSTEM CAPITAL NEEDS	101,066,889				38,312,479			From Rates & Monthly Charges Improvement
		Assumes that a 20 year roll-in, with a return on equity of 10% would work out to an average carrying cost of about 5%	5,053,344				1,815,624			New Meter Fees Expansion
		Annual Revenues					914,116			660,032 from B&C report and Balance Sheet submitted for PUC Docket 2009-032, plus 253,184 from Pro Forma statement submitted for PUC Docket 2009-032, plus 767,761 from B&C report and Balance Sheet submitted for PUC Docket 2009-032
		Annual Loss Currently Covered by C&CR					843,920			76,159 from Pro Forma statement submitted for System Acquisition Appraisal, May 2009 Draft
		Increase in Cost of Labor New Facilities and Rolling Stock					80760			Source: Brown & Caldwell Report Lana'i Water System Acquisition Appraisal, May 2009 Draft
							197,038			Source: Brown & Caldwell Report Lana'i Water System Acquisition Appraisal, May 2009 Draft
										OR
		Subtotal Additional Revenue					2,035,834			TOTAL
		Annual Revenue Requirements					3,851,458			5,335,010 With Base Case Development Only

Supply Options

Revenue Requirements To Cover Capital Expenditures

The total cost of projects identified and included in the Capital Plan in the event that the build-out scenario were chosen is \$99,530,889. This amount is further divided into “Maintenance” or “Expansion” projects. Maintenance projects are those which would be funded by the utility through its rates and monthly or bi-monthly charges. Expansion projects are those which would be covered either by LHI, or other developers as needed. These projects are typically recouped in “New Meter Fees”. These are sometimes called “Facility Capacity Charges”, “Tap-In Charges”, or “Water System Development Fees”. They are the same thing. The term “New Meter Fee” has been used here. Developer-funded or in-kind projects are not included in this analysis. One example is a possible on-site storage tank for fire protection at the Miki Basin. If this is built, it would be funded by the developer. Neither LWCI nor LHI would be likely to fund construction of such a project. However, such projects once dedicated to the utility become the responsibility of LWCI to maintain, operate and or replace.

In the previous draft of this chapter, the total amount of projects to be covered by rates and charges within the planning period was estimated at \$34,776,479. Some of the projects are specifically scheduled, others are unscheduled and assumed to roll in gradually over the twenty year period. Assuming a twenty year roll-in, with a 10% return on equity, the carrying costs work out to an average of about 5% per year. Annual carrying costs for maintenance and demand management projects were estimated at \$1,738,824 per year.

Previously it was thought that sufficient reclaimed water to warrant a line from Lana‘i to Manele would not be available until after the 20 year time frame, so reclaimed water costs had not been added into the base case forecast for the twenty year time period. Since the October 2009 draft of this document, the use of 60,000 gallons of reclaimed water at Miki Basin had been added in to the near term plan. The potential added charges could be covered through either rates or new meter fees, so the change was examined both ways. If covered by rates, this would bring annual revenue requirements to \$1,815,624.

Some additional costs are assumed based upon Table 4-5 of the May 29, 2009 DRAFT *Lana‘i Water System Acquisition Appraisal* for LWCI, and on the 2008 *Pro Forma* Statement of Income for Non-Potable Brackish Operations in PUC Docket 2008-03222. These sources list existing annual as roughly \$660,932 per year for LWCI and \$253,184 for LHI. Existing annual revenue losses covered by CCR are estimated at \$767,761 per year for LWCI and \$76159 for LHI, for a total existing operating expense of about \$1,758,036. Increased costs of labor and cost of new facilities and rolling stock are also taken from the DRAFT *Lana‘i Water System Acquisition Appraisal*. Increased costs of labor are estimated at \$80,760. Revenue requirements for new facilities and rolling stock are estimated at \$197,038.

Adding revenue requirements for the annual carrying cost of the proposed program (\$1,738,824), plus existing revenue requirements (\$1,758,036), assumed increases in cost of labor (\$80,760), new facilities and rolling stock (\$197,038), one arrives at an average annual revenue requirement of \$3,774,658 in 2008 dollars. With the addition of the Miki Basin project, the annual revenue requirement would be \$3,851,458.

Billing data were broken down into user classes and evaluated for relative percentage of total water sales by classes and usage amounts. These percents were then applied to overall revenue requirements to derive starting revenue targets for each use and consumption class. Assignment of costs was adjusted to provide for discounted rates for low water use in all classes, to encourage conservation, and to discourage excessive

Revenue Requirements To Cover Capital Expenditures

irrigation. The resulting charges per thousand gallons of water are presented in Figures 5-55 and 5-56. Rates are shown with and without financing of the Miki Basin reclaimed project, since it could be financed by rates or fees. Bi-monthly meter charges were not re-calculated, and are presented in Figure 5-54.

FIGURE 5-49. Proposed Bi-Monthly Charges Based Upon Capital Plans

Bi-Monthly Meter Fees		
Meter Size	Relative Capacity	Bi-Monthly Rate (\$)
5/8"	1	25
3/4"	1.5	37.5
1"	2.5	62.5
1-1/2"	5	125
2"	8	200
2-1/2"	12	300
3"	16	400
4"	25	625
6"	50	1250
8"	80	2000
hydrant meters 3" charged daily \$28.69 / day	25	625

The rate design shown in Figures 5-50 and 5-51 includes rates for both potable and brackish service, and is steeply tiered to encourage conservation. A relatively low “lifeline” rate is maintained across the low end of all use classes.

Certain policy recommendations are reflected by the rate design. It is designed for equity, especially for those whose uses reflect only basic necessity for livelihood. It is designed to strongly encourage conservation. A third policy statement is made in the balance of costs between fresh and potable brackish water. Although the brackish and potable systems are registered separately under the PUC, this rate design addresses both, adding additional tiers to the brackish system as well as the potable. One might tend to think that potable water should be more expensive than brackish water, since it is of higher quality. At present, the brackish sources are generally less expensive than the potable on Lana‘i. However, water levels of the brackish sources on Lana‘i have been declining much more rapidly than those of the fresh sources. Continuing decline in water levels will make these sources more costly. All of the water on Lana‘i comes from one aquifer system. Nor is it clear that irrigation in Manele, where the brackish source is used, need be cheaper than irrigation in Lana‘i City. Although the rate design spreadsheet was set up such that these sources of water can be charged differently, the draft structure presented below sets irrigation charges for brackish and potable water at the same rate.

After the rate in the first column of rates in Figure 5-50 were presented, CCR expressed some concern about the relative fraction of cost that was assigned to the Manele Golf Course. All other rate columns, including the second column in Figure 5-51, have brought that fraction down, in varying amounts. The rate designs in Figure 5-56 have more tiers, to help address the irrigation question fairly.

Supply Options

FIGURE 5-50. Possible Rates Based Upon Replacement and Operating Needs

Rates Per 1,000 Gallons	\$ / Kgal No Miki Proj	\$ / Kgal w / Miki Proj
Res SF <=200	1.25	1.35
Res SF >200 - 500	1.95	2.00
Res SF >500-1,000	2.55	2.60
Res SF >1,000-1,500	4.65	5.15
Res SF >1,500-2,000	6.75	6.75
ResSF >2,000	7.95	8.00
Res MF <800	1.25	1.35
Res MF >800-2000	1.95	2.00
Res MF >2000	3.45	5.00
*assumes 4 units per meter		
Ag <5000	1.25	1.25
Ag >5000	1.85	1.85
Hotel <+200 GPD/room	1.25	1.35
Hotel >200 to 350 GPD /room	1.95	2.50
Hotel >350 to 500 GPD /room	3.50	5.60
Hotel >500 GPD / room	7.15	7.15
Commercial, Gov` t & PQP <500	1.25	1.35
Commercial, Gov` t & PQP >500-1,000	1.95	2.50
Commercial, Gov` t & PQP >1,000-2,000	2.65	3.50
Commercial, Gov` t & PQP >2,000-5,000	4.65	5.65
Commercial, Gov` t & PQP >5,000	6.65	7.25
Irrig & Devel <500	3.70	2.50
Irrig & Devel >500-1000	4.75	3.50
Irrig & Devel >1,000-2000	5.80	5.60
Irrig & Devel >2,000 -5000	6.85	7.00
Irrig & Devel >5,000	7.95	8.00
Brackish Irrig & Devel <500	3.70	2.50
Brackish Irrig & Devel >500-1000	4.75	3.50
Brackish Irrig & Devel >1,000-2000	5.80	5.50
Brackish Irrig & Devel >2,000 -5000	6.85	7.25
Brackish Irrig & Devel >5,000	7.95	8.00

Revenue Requirements To Cover Capital Expenditures

FIGURE 5-51. Possible Rates Based Upon Replacement and Operating Needs

Rates Per 1,000 Gallons	No Miki Proj	No Miki Proj	w Miki Proj	w Miki Proj
Res SF <=200	1.75	1.80	2.00	1.95
Res SF >200 - 500	2.85	2.85	2.85	2.85
Res SF >500-1,000	4.05	4.05	5.00	5.00
Res SF >1,000-1,500	5.75	5.75	5.75	6.00
Res SF >1,500-2,000	7.00	7.00	7.50	7.50
ResSF >2,000	8.75	8.75	9.25	9.25
Res MF* <800	1.75	1.75	2.00	2.00
Res MF >800-2000	2.85	2.85	2.85	2.85
Res MF 2,000 - 4,000	4.05	4.05	4.50	4.50
Res MF 4,000 - 8,000	5.75	5.75	5.75	5.75
Res MF >8000	7.00	7.00	7.50	7.50
*assumes 4 units per meter				
Commercial Gov't , PQP <500	2.05	2.05	2.25	2.25
Commercial and Gov't , PQP >500-1,000	2.85	2.85	2.85	2.85
Commercial and Gov't , PQP >1,000-2,000	3.65	3.65	3.65	3.65
Commercial and Gov't. PQP >2,000-5,000	4.75	4.75	5.00	5.00
Commercial and Gov't. PQP >5,000	5.15	5.15	5.15	5.15
Hotel <+200 GPD / room	2.05	2.05	2.25	2.25
Hotel 200 to 350 GPD / room	2.85	2.85	2.85	2.85
Hotel 350 to 500 GPD /room	4.75	4.75	5.00	5.05
Hotel >500 GPD / room	6.50	6.50	7.25	7.25
Ag <500	1.75	1.05	1.10	1.10
Ag <5000	1.05	1.10	1.10	1.15
Ag >5000	1.05	1.15	1.25	1.25
Irr & Devel <500	4.35	4.35	4.35	4.50
Irrig & Devel >500-1000	5.35	5.35	5.35	5.35
Irrig & Devel >1,000-2000	6.50	6.50	6.50	6.50
Irrig and Devel >2,000 -5000	7.70	7.70	7.70	7.70
Irrig and Devel >5,000	8.50	8.50	8.50	8.50
Brackish Irr & Devel <500	4.35	4.35	4.50	4.50
Brackish Irrig & Devel >500-1000	5.35	5.35	5.65	5.65
Brackish Irrig & Devel >1,000-2000	6.50	6.50	6.50	6.50
Brackish Irrig and Devel >2,000 -5000	7.70	7.70	7.70	7.70
Brackish Irrig and Devel >5,000	8.75	8.75	8.75	8.75
Manele GC <50,000	4.30	4.30	4.45	4.45
Manele GC 50,000 - 100,000	5.35	5.35	5.50	5.50
Manele GC 100,000 - <250,000	6.50	6.50	6.50	6.50
Manele GC 250,000 - < 500,000	7.70	7.70	7.70	7.70
Manele GC >500,000 - 650000	8.75	8.75	8.75	8.75
Manele GC >650,000	15.00	15.00	15.00	15.00

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Cost recovery on an estimated \$64,754,410 based upon build-out meter counts would lead to a cost of \$27,621.75 or \$28,261.60 for a new 5/8" meter, even without the reclaimed project. Clearly most of the community can not and will not pay that. It would be impossible to fund the proposed build-out scenario without in-kind contribution. The bulk of the costs of a build-out scenario would probably be recovered through real estate sales, rather than new meter fees.

FIGURE 5-52. Projected Costs Per Meter - Based on Full Build-Out Within 20 Years

		Build-Out	Build-Out
	Relative	New Fee	New Fee
Meter Size	Capacity	Rate	Rate
			w / Miki
5/8"	1	\$27,621.75	\$28,261.60
3/4"	1.5	\$41,432.63	\$42,392.40
1"	2.5	\$69,054.38	\$70,654.00
1-1/2"	5	\$138,108.75	\$141,308.00
2"	8	\$220,974.00	\$226,092.80
2-1/2"	12	\$331,461.00	\$339,139.20
3"	16	\$441,948.00	\$452,185.60
4"	25	\$690,543.75	\$706,540.00
6"	50	\$1,381,087.50	\$1,413,080.00
8"	80	\$2,209,740.00	\$2,260,928.00
hydrant meters 3" charged daily	25	\$690,543.75	\$706,540.00
		-----	-----
		daily rate	daily rate
hyd meter charged daily		\$1,891.90	\$1,935.73

Alternatively, the improvements needed to the year 2030 according to the base case forecast would require only \$5,335,010 in cost recovery over the planning period, and could be accommodated with a meter fee structure that started at \$532 per meter without the reclaimed project. The projects included in this theoretical new meter fee are Well 15, Renovation and Recommissioning of Well 7, and the connection of Well 7 to the Lana'i System. With the Miki Basin reclaimed project, the cost recovery would rise to \$6,871,010, and can be accommodated with a fee structure starting at \$686 for a 5/8 inch meter.

FIGURE 5-53. Projected Costs Per Meter - Based on Base Case Forecast

	Relative	New Meter Fee	New Meter Fee
Meter Size	Capacity	Base Case	Base w/Recl.
5/8"	1	\$532	\$686
3/4"	1.5	\$798	\$1,029
1"	2.5	\$1,331	\$1,715
1-1/2"	5	\$2,661	\$3,430
2"	8	\$4,258	\$5,488
2-1/2"	12	\$6,387	\$8,232
3"	16	\$8,516	\$10,976
4"	25	\$13,306	\$17,150
6"	50	\$26,613	\$34,300
8"	80	\$42,580	\$54,880
hydrant meters 3"	25	\$13,306	\$17,150
hyd meters charged daily		\$28.69 / day	\$46.99 / day

Supply Options

The source plan on the previous page has not been adjusted for Miki Basin, since it already accounts for additional water to be generated at the treatment plants.

Conclusion

Several issues have been addressed in this chapter.

A list of options has been delineated that can meet either the base case or build-out forecast. These options have been characterized based on costs and other factors. Even at presumed build-out of Phase II, the source plan assumes only 313,938 GPD in new reclaimed water will become available island-wide, with only 267,371 of that in Lana‘i City. For this reason, transmission for 500,000 GPD from Lana‘i City to Manele is not included in the 2030 source plan. The basis for these assumptions is discussed in Chapter 4, specifically the base case forecast and Phase II build-out forecasts from Figure 4-54 on page 4-59 are used in the source plan table above. Aside from normal growth at Manele, Koele and within Lana‘i City, the only capital plan designed specifically to offset potential pumpage with reclaimed water within the planning period is the Miki Basin project. The possible use of reclaimed water has also been mentioned in relation to or more new developments in Lana‘i City. This may be useful to the extent that this is possible and can offset water that would otherwise be pumped.

A few rate and fee structures to address system inadequacies and repairs necessary over the next twenty years have been provided. These rates addresses both potable and brackish systems, and are steeply tiered to encourage conservation. These rate and fee structures were designed to enable the utility to meet forecasted growth in a self sufficient manner.

Based on discussions with utility personnel, certain source replacement projects are covered by LWCI, through it's rate structure. The source projects included in this rate structure are Well 3 replacement, Well 2-A, replacing Well 2; Well 2-B, replacing Shaft 3, and replacements of Wells 1 and 4. All other source construction is assumed to be paid for by LHI, and covered by the "New Meter Fee". The reclaimed project to Miki Basin was treated flexibly. Both adjusted rates and fees have been designed to enable this project so that it can be funded in either fashion or provide flexibility to accommodate one of similar cost.

Approximately 485,000 GPD in conservation potential has been identified. A substantial investment has been added to the capital plan to enable these savings to be realized with the proposed rate structure.

Although conservation programs and watershed protection are not normally capitalized, they do need to be recovered within the rates, so these have been included in the proposed rate structure.

With regard to watershed expenses, the inclusion of a portion of the funding necessary to construct Increment 3 of the Lana‘ihale Fence in the capital plan would mean that according to the proposed rate structure, utility rate-payers would be making a contribution to help insure that the third increment of the Lana‘ihale fence gets built. A corollary of this contribution should be that continued development entitlements are contingent upon timely construction of this fence.

Conclusion

Two sets of “New Meter Fee” structures have been derived. The “New Meter Fee” structure covers source investments made by LHI. The base case “New Meter Fee” includes only Well 15 and the connection of Well 7 to the distribution system, because these were existing and near-term plans for source and could meet the base-case scenario. These sources could be traded for other selections with some minor adjustments. This new meter fee remains quite reasonable, starting at \$532 or \$686 per 5/8” meter, depending upon how the Miki Basin reclaimed project is funded.

Long term source projects are in the “New Meter Fee” for the build-out scenario. The purpose of this analysis was to examine what sort of cost recovery might be necessary if the utility were to fund the sources intended in the build-out plan. According to this analysis, “New Meter Fees” would be prohibitively expensive, in excess of \$25,000 for a 5/8” meter, if build-out were to occur within the planning period. It would not be possible to recover this cost from a “New Meter Fee”. If the utility had to fund source development, these sources could not get built at this pace, and build-out would not occur over the twenty year planning period. If these sources are built, they will likely have to be dedicated as in-kind contributions.

Although several new sources have been identified, they would not be sufficient to meet build-out of the full CCR proposals at existing unaccounted-for water and per-unit consumption rates. The ability to build-out these plans will depend upon how successful the company is at bringing these rates down, as well as upon performance of the resource with changes to pumpage distribution and amounts, the state of the watershed, climatic influences and other factors.

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