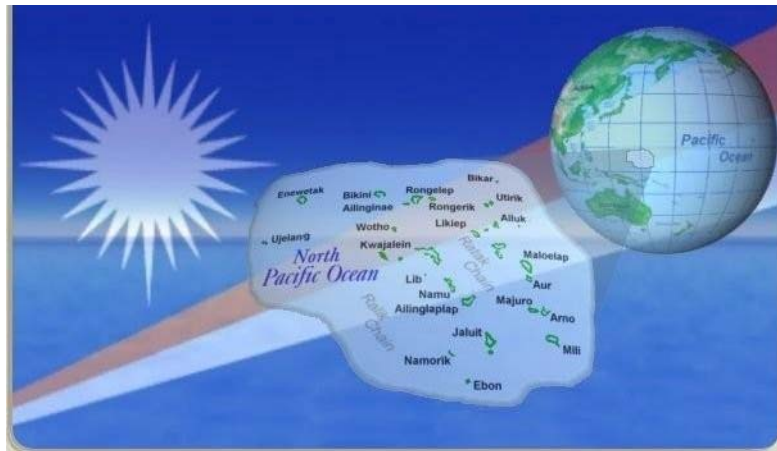


# REPUBLIC OF THE MARSHALL ISLANDS

## CONSUMER PRICE INDEX



**Economic Policy, Planning and Statistics Office  
Office of the President**

**30 May, 2008  
2nd Quarter  
Majuro and Ebeye, RMI**

## **CPI Construction and Methodology**

### **Survey Overview:**

Over a 2-month period from April to May 2002, the Office of Planning and Statistics, which was renamed the Economic Policy, Planning and Statistics Office (EPPSO), of the Republic of the Marshall Islands (RMI), conducted a Household Income and Expenditure Survey (HIES) from April 1 until mid-May. The staff selected four sample areas of Majuro, Ebeye, Jaluit and Likiep. The selection of these sample areas was judgmental and was based on choosing the largest population centers (Majuro and Ebeye) and then two other areas that were logistically feasible to reach in conducting the survey and were in the middle of the islands that were ranked by population.

This survey used two types of survey methods to gather data. For the more expensive and less frequently purchased items, such as major appliances, electronic goods, new and used vehicles, etc., a pre-printed, survey questionnaire was completed by an interviewer. For those items, which are more frequently purchased, such as food, tobacco, drinks, etc., the household respondent was given a diary to record all purchases during a one-week period.

### **Household Sample:**

A total sample size of 700 in all four areas was used for the questionnaire portion of the survey. Remarkably, a total of 657 households agreed to participate. For any country getting such a high participation rate is an enviable achievement. For the diary portion of the survey, 355 households participated.

### **Selection of the Item Sample:**

In the summer of 2002, staff members of the U.S. Bureau of the Census International Program's Center processed the RMI's HIES data. These items and expenditures were arrayed using the U.S. Bureau of Labor Statistics CPI classification system as a frame of reference. Then, using a statistical technique called "Probability Proportionate to Size", a new item sample was selected. Using the PPS technique to select the item sample ensured that those items with the highest monthly household expenditures were selected in the sample. The sample included a total of 61 items compared in the revised CPI.

### **Expanding the Major Groups:**

Using the BLS Classification System as a frame of reference allowed the EPPSO to expand the number of groups included in the RMI's CPI. Instead of having four major groups, the revised CPI now has 9 major groups. Having more groups allows the users to understand better which groups are responsible for the increases/decreases of the CPI. In the previous CPI, for example, alcoholic beverages were a part of the Food Group. Now, it is one of the 5 new groups. The others are: Housing, Utilities and Appliances, Medical Care, Education and Communication and Other Goods and Services.

**Expansion of the Outlet Sample:**

The previous CPI collected price data from 4 different outlets. In the revised CPI, the number of retail outlets has been expanded by more than ten-fold and the outlet sample now consists of 46 different retail outlets. These are more diversified and geographically dispersed throughout Majuro. This substantially larger outlet sample ensures that the EPPSO collects retail price data from a wide variety of outlets.

**Data Collection and Price Review Manual:**

The EPPSO has made another enhancement to the CPI by increasing the data collection training and by formalizing this vital aspect of price collection by developing a Data Collection Manual. This new manual covers virtually all aspects of price collection ranging from initiating the retail outlet to the rules for selecting a retail item and re-pricing. This new manual will improve data collection quality because it will provide guidance to the data collectors in handling almost any type of re-pricing situation.

**Linking the Old and New CPIs:**

In the 1<sup>st</sup> Quarter of 2003, data collectors collected price data for both the old and revised CPIs and the two indexes were “spliced” together at that point. In order for two indexes to be linked together, there must be at least one period where prices are collected for both the old and the new indexes. Beginning in the 2<sup>nd</sup> Quarter 2003, the EPPSO collected price data for only the items in the revised CPI. From the 4<sup>th</sup> Quarter 2002 to the 1<sup>st</sup> Quarter 2003, the price change was based on the previous CPI; from the 1<sup>st</sup> to the 2<sup>nd</sup> Quarters 2003, the price movement reflected the change in prices for revised CPI.

**Changing the Base Period:**

Another change in the CPI was rebasing it from 1982 = 100 to the 1<sup>st</sup> Quarter 2003 = 100. This is a mathematical change in the CPI but the more recent base period will make the CPI easier for users to understand. There is virtually no difference in the percent changes from the old CPI from one period to another and the same indexes on the base period.

**Calculating the Consumer Price Index**

As with most CPIs around the world, the EPPSO will continue to use the Laspeyres method to calculate the CPI. This is the most widely used and internationally accepted method of calculating price change for a CPI. The Laspeyres formula is shown below:

**Laspeyres Formula:**

$$I_n = \left( \frac{\sum_{i=1}^n p_i q_0}{\sum_{i=1}^n p_0 q_0} \right) \times 100$$

where,

$I_n$  = Price Index in period n

n

$\sum_{i=1}^n p_i q_0$  = the costs of a market basket of goods and services in period n

n

$\sum_{i=1}^n p_0 q_0$  = the costs of a market basket of goods and services in the base period

p = price of the good or service

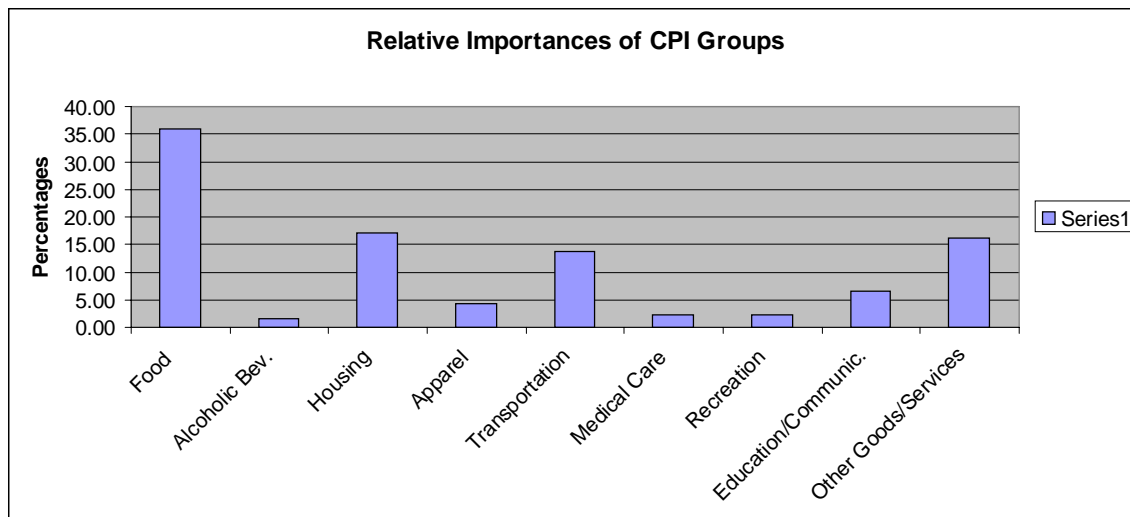
q = quantity of the good or service

i = index for the good or service (where i goes from 1, ...,n)

This method of index computation uses the quantities of commodities purchased in the base period as the basis for computing the value of the “market basket.” First, there are n number of items in the market basket with each having a base quantity. Each of these items has a base price,  $p_0$  and current price,  $p_i$ . Multiplying  $p_0$  with  $q_0$  gives the total expenditure for a particular commodity for the base period. Current expenditure for an item is obtained by multiplying  $p_i$  with  $q_0$ . The sum of current expenditures for all items in the market basket is expressed as  $\sum p_i q_0$ , while the sum  $\sum p_0 q_0$  is the total market basket expenditures in the base period. Notice that in both summations the term  $q_0$  remains constant, which means by using the same quantities only price changes are reflected in two pricing periods.

For those unfamiliar with statistical notation, trying to read and understand the above explanation can be an intimidating experience. In layman’s terms, the above simply means that all of the 61 items in the CPI are priced every pricing quarter and the prices for each item in the current quarter are compared to the same prices in the base period. The base period is the 1<sup>st</sup> quarter 2003 when the CPI was set equal to 100. That is when the CPIs for each of the 9 major groups and the All Items = 100.

In actuality, the EPPSO uses a slight variation to this formula. Each month, the sums of the prices that are collected for each item are compared to the sums of the same prices in the previous quarter – not the base period. The sum of the prices of an item in the current quarter is divided by the sum of the prices in the previous quarter to calculate a price relative. This price relative is multiplied by the item’s weight in the previous quarter to update the item’s weight in the current quarter. This product is then divided by the item’s weight in the base period to calculate an item’s CPI. By summing the updated weights for all of the items in a group and dividing that sum by the same weights in the base period will calculate the group’s current CPI.



## 2<sup>nd</sup> Quarter 2008 CPI for Majuro

The Majuro CPI witnessed a dramatic increase of 12.45 over the 2<sup>nd</sup> Quarter. This is by far the largest increase in the CPI under the rebased 2003 CPI system. The Food and Utility Groups are largely responsible for this increase. Over the last four quarters the CPI has increased by 19.44.

### **Food Group**

This index jumped from 113.71 to 126.18 over the quarter, an increase of 12.47. This is due to major increases in the price of flour, rice, eggs and many other items. Because of the large weight of this group, it has a major impact on the CPI. Over the last four quarter there have been significant increases for most items in this group.

### **Alcoholic Beverages Group**

This group saw a minor change of 1.29 during the quarter.

### **Housing, Utilities, and Major Appliances Group**

This grouped jumped 43.84 during the last quarter, from 148.42 to 192.26. This is largely as a result of increases in utility rates and some major household appliances. Four quarters ago, this index measured in at 129.86.

### **Apparel Group**

This group saw a significant decrease of 8%, due primarily to decreases in prices for women's clothes and diapers.

### **Transportation Group**

This group increased by 6.46% during the quarter because of fuel price increases.

### **Medical Care and Education/Communication Groups**

No change in the 2<sup>nd</sup> quarter.

## Recreation Group

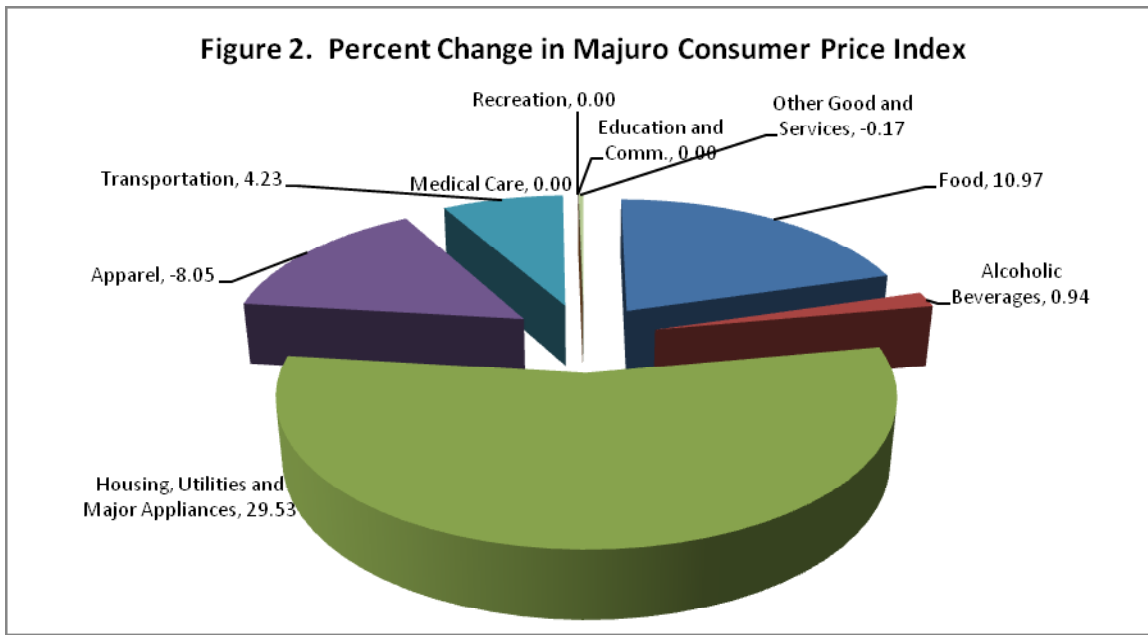
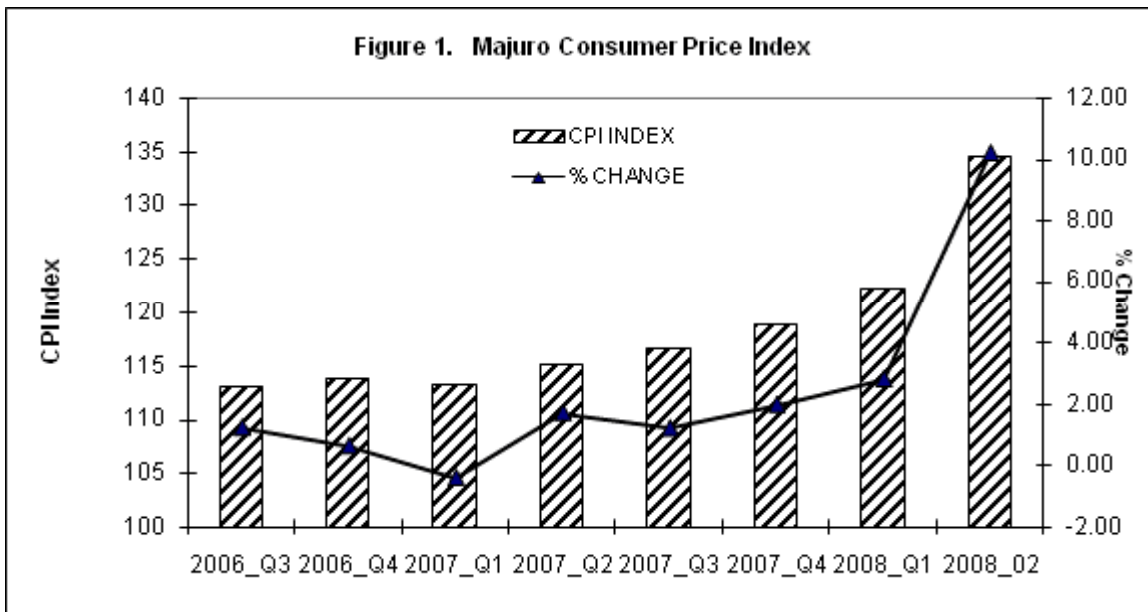
No change in the 2<sup>nd</sup> quarter.

## Other Goods and Services Group

This group saw a minor decrease of .16% over the quarter.

### Majuro Consumer Price Index by Major Group, 2006 Q3 to 2008 Q2

	2006_Q3	2006_Q4	2007_Q1	2007_Q2	2007_Q3	2007_Q4	2008_Q1	2008_Q2
<b>All Group</b>	<b>112.96</b>	<b>113.69</b>	<b>113.22</b>	<b>115.13</b>	<b>116.51</b>	<b>118.80</b>	<b>122.12</b>	<b>134.57</b>
Food	108.08	110.34	110.62	112.02	109.47	113.12	113.71	126.18
Alcoholic Beverages	135.61	130.56	133.08	134.34	136.24	136.24	136.97	138.26
Housing, Utilities and Major Appliances	128.45	127.71	127.95	129.86	142.28	143.46	148.42	192.26
Apparel	106.05	104.26	105.82	102.86	103.11	105.33	113.13	104.02
Transportation	131.25	131.74	126.30	138.50	138.60	141.53	152.97	159.43
Medical Care	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Recreation	83.73	84.91	85.56	85.51	85.64	83.74	83.74	83.74
Education and Comm.	115.90	115.90	115.90	115.90	115.90	115.90	115.90	115.90
Other Good and Services	96.42	96.94	96.94	96.77	94.69	96.68	98.73	98.57
<b>Percent Change</b>								
<b>All Group</b>	<b>1.21</b>	<b>0.62</b>	<b>-0.42</b>	<b>1.69</b>	<b>1.20</b>	<b>1.96</b>	<b>2.80</b>	<b>10.19</b>
Food	-1.92	2.09	0.26	1.27	-2.28	3.33	0.52	10.97
Alcoholic Beverages	1.62	-3.72	1.93	0.95	1.41	0.00	0.54	0.94
Housing, Utilities and Major Appliances	6.22	-0.58	0.19	1.50	9.56	0.83	3.46	29.53
Apparel	-3.54	-1.69	1.50	-2.80	0.24	2.16	7.41	-8.05
Transportation	6.61	0.37	-4.13	9.66	0.07	2.11	8.08	4.23
Medical Care	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Recreation	-6.93	1.40	0.77	-0.06	0.15	-2.22	0.00	0.00
Education and Comm.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Goods and Services	0.18	0.53	0.00	-0.17	-2.15	2.10	2.12	-0.17



**Ebeye Consumer Price Index**

New System for the Consumer Price Index for Ebeye has been established through technical assistance provided by the Secretariat of the South Pacific (SPC) to satisfy inquiry made by the EPPSO. Implementation of the technical assistance was met and successfully completed by Chris Ryan of SPC, with assistance of John Henry of Economic Policy, Planning and Statistics Office. The effort was carefully worked through a proposed set of items to tie in with the nine key groups of the RMI CPI in order to produce a broad level of weights for Ebeye. As a result,

new weights were derived for the Ebeye Consumer Price Index but were not exactly yielded as the weights generated for the four islands combined in the preceding Household Income and Expenditure Survey (HIES 2002). As new weights achieved were very close to the old weights, calculation of new CPI when taking place won't be an issue.

**Comparison between old & new Ebeye weights**

GROUP	Weight	
	New	Old
Food	46.7	73.4
Alcoholic Beverages	1.4	
Housing, Utilities and Major Appliances	15.9	0.1
Apparel	6.1	2.4
Transportation	12.3	9.0
Medical Care	0.9	
Recreation	2.2	
Education & Communication	4.4	
Other Goods & Services	10.1	15.1
TOTAL	100.0	100.0

The table above shows a new structure of the Ebeye Consumer Price Index developed from the effort.

After working through each group in the broad level weights of the Ebeye Consumer Price Index, new weights were drawn for each group – i.e. Food Group (73.4 drops to 46.7); Housing, Utilities and Major Appliances Group (0.1 increases to 15.9); Other Goods & Services (15.1 drops to 10.1); The Alcoholic Group, the Medical Care Group, the Recreation Group, and the Education & Communication that were not accounted for in the old CPI for Ebeye now are included.

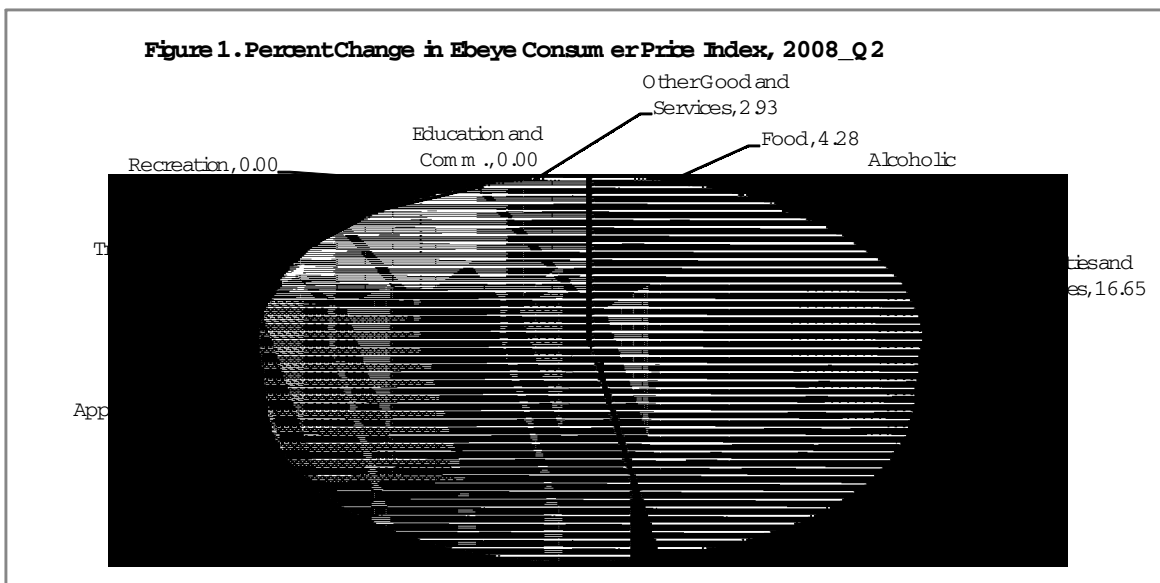
**Comparison between Ebeye weights and RMI weights**

GROUP	Weight	
	Ebeye	RMI
Food	46.7	35.9
Alcoholic Beverages	1.4	1.7
Housing, Utilities and Major Appliances	15.9	17.1
Apparel	6.1	4.3
Transportation	12.3	13.7
Medical Care	0.9	2.2
Recreation	2.2	2.3
Education & Communication	4.4	6.6
Other Goods & Services	10.1	16.2
TOTAL	100.0	100.0

As can be seen from the table above, a new comparison reference to the weights of Ebeye versus the RMI weights is good presentation and is giving a good idea of relative importance of each group across the two Consumer Price Indexes of the country.

It is important to note that changing the base period of the Ebeye Consumer Price Index from 1<sup>st</sup> quarter 2005 = 100 to 4<sup>th</sup> quarter 2006 = 100 was necessary in order for the new system to work properly.

<b>Ebeye Consumer Price Index by Major Group, 2006 Q4 to 2008 Q2</b>							
	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4	2008 Q1	2008 Q2
<b>All Group</b>	<b>100.00</b>	<b>100.41</b>	<b>102.16</b>	<b>104.33</b>	<b>107.02</b>	<b>110.89</b>	<b>118.28</b>
Food	100.00	100.10	102.28	106.25	108.33	110.48	115.21
Alcoholic Beverages	100.00	101.48	101.48	101.52	101.52	101.52	102.76
Housing, Utilities and Major Appliances	100.00	100.00	100.00	99.52	103.10	103.42	120.64
Apparel	100.00	101.80	101.73	97.09	101.17	101.20	115.27
Transportation	100.00	101.90	105.07	110.49	120.07	135.38	145.53
Medical Care	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Recreation	100.00	100.00	100.00	100.00	100.00	107.85	107.85
Education and Comm.	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Other Goods and Services	100.00	100.50	101.08	103.59	101.45	108.18	111.35
<b>Percent Change</b>							
<b>All Group</b>		<b>0.41</b>	<b>1.74</b>	<b>2.12</b>	<b>2.58</b>	<b>3.62</b>	<b>6.66</b>
Food		0.10	2.18	3.88	1.95	1.99	4.28
Alcoholic Beverages		1.48	0.00	0.03	0.00	0.00	1.22
Housing, Utilities and Major Appliances		0.00	0.00	-0.48	3.59	0.31	16.65
Apparel		1.80	-0.06	-4.56	4.20	0.03	13.90
Transportation		1.90	3.11	5.15	8.67	12.75	7.50
Medical Care		0.00	0.00	0.00	0.00	0.00	0.00
Recreation		0.00	0.00	0.00	0.00	7.85	0.00
Education and Comm.		0.00	0.00	0.00	0.00	0.00	0.00
Other Goods and Services		0.50	0.58	2.48	-2.06	6.64	2.93



**2nd Quarter 2008 CPI for Ebeye**

The Ebeye CPI jumped from 110.89 to 118.28, the largest increase since the Ebeye CPI was rebased in late 2006. Over the last four quarters the Ebeye CPI index has increased from 102.16 to 118.28.

**The Food Group,**

This group saw an increase from 110.89 to 115.21, a change of 4.32 during the quarter.

**Alcoholic Beverages Group**

There was a minor increase of just over 1.2 in the index to 102.76 from 101.52.

**Housing, Utilities and Major Appliances Group**

There was a significant increase in this group from 103.42 to 120.64. Four quarters ago this index stood at 100.

**Apparel Group**

This group also saw a major increase from 101.2 to 115.27, because of significant increases in the price of diapers on Ebeye.

**Transportation Group**

This group moved up from 135.38 to 145.53, due to increases in the price of fuel. Four quarters ago this group index stood at 105.47.

**Medical Care Group**

No changes in this group over the quarter

**Recreation Group**

No changes in this group over the quarter

**Education and Communication Group**

No changes in this group over the quarter

### Other Goods and Services Group

This group increased from 108.18 to 111.35, reflecting price increases in toilet paper and toothpaste.

### Majuro and Ebeve CPI basket Comparison 2nd quarter 2008

The 2<sup>nd</sup> quarter saw a price difference of 23.98% between Majuro and Ebeve among a basket of the most commonly purchased food and household products. On Majuro this basket of goods cost \$136.63 and on Ebeve the same basket cost \$169.40. These baskets increased by about \$3.50 on Majuro and by \$5 on Ebeve.

AVERAGE PRICE COMPARISON(Majuro and Ebeve) 2007_Q2 to 2008_Q2														
No.	Code	Group and Item Name	2007_Q3			2007_Q4			2008_Q1			2008_Q2		
			Majuro	difference %	Ebeve	Majuro	differenc %	Ebeve	Majuro	differen %	Ebeve	Majuro	difference %	Ebeve
1	01023	Rice	8.6	5.5	9.1	8.9	8.3	9.7	8.3	16.0	9.58	9.80	6.84	10.47
2	01024	Flour	12.7	19.0	15.1	13.3	17.9	15.7	13.6	40.4	19.11	16.96	18.04	20.02
3	03018	Canned corned beef	2.9	24.8	3.6	2.9	10.2	3.2	3.0	22.7	3.62	3.08	17.53	3.62
4	03019	Canned corned beef hash*	2.3	60.0	3.7	2.3	55.4	3.6	3.7	-1.6	3.64	3.25	10.15	3.58
5	03049	Canned luncheon meat (Spam, etc.)	3.2	30.5	4.2	3.2	34.2	4.3	3.46	30.5	4.52	3.58	22.57	4.39
6	03081	Canned mackeral	1.4	45.0	2.0	1.2	73.5	2.1	1.45	41.2	2.04	1.55	33.88	2.08
7	03082	Canned tuna	1.1	20.0	1.3	1.2	10.6	1.4	0.98	32.4	1.30	1.28	8.17	1.38
8	07061	Coffee (instant coffee)	4.7	48.9	7.1	4.8	37.7	6.6	4.74	44.3	6.84	4.39	51.38	6.65
9	08071	Sugar	2.1	17.8	2.5	2.3	-4.1	2.2	2.28	11.0	2.53	2.24	39.29	3.12
10	10041	Ramen and other instant noodles	0.7	10.3	0.7	0.6	11.9	0.7	0.62	9.4	0.68	0.64	15.93	0.74
11	10071	Soy sauce	2.3	70.4	3.9	2.3	73.2	4.0	2.54	62.8	4.14	2.40	76.13	4.23
12	33083	Kerosene stove*	56.5	16.2	65.7	56.7	15.9	65.7	56.7	15.9	65.7	56.70	15.87	65.70
13	33084	Kerosene and other lamps*	8.5	84.7	15.7	8.5	84.7	15.7	8.5	84.7	15.7	8.50	84.71	15.70
14	43032	Zorries	4.9	-6.6	4.6	4.9	-6.6	4.6	4.72	-2.9	4.59	4.56	0.71	4.59
15	51074	Gasoline	4.5	10.1	4.9	4.8	17.9	5.6	5.31	8.1	5.74	5.95	17.53	6.99
16	93007	Cigarettes	3.7	4.6	3.9	3.7	4.6	3.9	3.85	29.9	5.00	3.85	29.87	5.00
17	93016	Mosquito coils*	4.0	5.0	4.2	4.0	5.0	4.2	4.2	0.0	4.2	2.25	86.67	4.20
18	93022	Kerosene	4.5	-3.2	4.4	4.9	2.5	5.0	5.11	6.6	5.45	5.65	22.76	6.94
			128.6	21.69	156.5	130.5	21.0	157.97	132.99	23.61	164.38	136.63	23.98	169.40

