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***GUAM***  
***CONSUMER PRICE INDEX***

Cost of Living Section

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**Bureau of Statistics and Plans**  
**Business and Economic Statistics Program**  
**Government of Guam**

**THOMAS A. MORRISON**  
**ACTING DIRECTOR**

**ALBERT M. PEREZ**  
**CHIEF ECONOMIST**

**SELINA C. TENORIO**  
**STATISTICIAN II**

**HEATHER R. PEREZ**  
**DATA CONTROL CLERK II**

**MERNALEE A. SABLAN**  
**STATISTICAL TECHNICIAN I**

**DEFINITION OF THE CONSUMER PRICE INDEX**

The CONSUMER PRICE INDEX (CPI) is a measure of the average change in prices over time of goods and services purchased by households, both families and single persons living alone. The Guam 2008 CPI is based on the concept of a representative “market basket”, a sample of all goods and services that consumers purchase as determined by the 2005 Household Income and Expenditure Survey (HIES) funded by the US Department of Interior to the US Census Bureau, and is similar in design with the US CPI.

The 2008 CPI is measured from a total of 165 items from 8 major groups, and indices are computed at two different levels of aggregation. More than 1,050 price quotations are collected during the middle month of each quarter either by telephone or on-site survey by qualified price enumerators. There are approximately 230 business outlets included in the construction of the CPI, ranging from grocery, department and hardware stores to a variety of service establishments. This report provides average price changes for all groups and subgroups, and special indexes from consecutive quarters to one year earlier. An annual average and annualized inflation rate are also reported.

**HOW TO INTERPRET INDEX CHANGES**

A price change can be expressed as a percentage change between two periods, as a difference in index points between a given period and a base period assigned an index of 100.0. Thus, an index of 110.7 for a given period means the price level has increased by 10.7% from the based period of 100.0. It does not mean a 10.7% change from the immediately preceding period as shown in Example 1:

**Example 1:**

Period:	1 <sup>st</sup> Qtr. (base period)	2 <sup>nd</sup> Qtr.	3 <sup>rd</sup> Qtr.
Index:	100.0	108.4	110.7
		8.4% change	2.1% change
		----- 10.7% change -----	

Any period, such as the 2<sup>nd</sup> Quarter in the next example, can be converted to a base period by dividing all indices individually by the periods' index, then multiplying the results by 100.

**Example 2:**

Period:	1 <sup>st</sup> Qtr. (base period)	2 <sup>nd</sup> Qtr.	3 <sup>rd</sup> Qtr.
Index:	100.0	108.4	110.7
Period:		2 <sup>nd</sup> Qtr. (base period)	3 <sup>rd</sup> Qtr.
Index:		100.0	102.1
			-----2% change-----

In example II, we dealt with a change in price index from a given quarter to the quarter immediately succeeding it – a 2.1% change from the second to the third quarter. However, many economic statistics, such as personal income, government revenues, and expenditure, are reported on an annual basis. The equivalent annual rate is used to determine what the index would be if a price change during a three-month period continues at the same rate for four quarters, a twelve-month period. The annual rate is often used to achieve uniformity in statistical expression.

Thus, a quarterly change of 1.0% is equivalent to an annual rate of 4.1%. If prices were to increase 1.0% each quarter for four quarters, the annual increase would be 4.1%. Derivation of this figure is shown in the Example III.

**Example III:**

$P_n = P_o(1+i)^n$  where

$P_n$	= equivalent annual rate
$P_o$	= base index (100.0)
$i$	= current rate (1.0%)
$n$	= number of periods (4)

Thus,  $104.1 = 100.0 (1 + .01)^4$

However, the equivalent annual rate should not be interpreted as a projection or price forecast. It is only a standard form for showing price changes that have occurred. The CPI only reports what has happened, while annual projections must be based on factors which determine future price changes.

Please see [www.bsp.guam.gov](http://www.bsp.guam.gov), for historical CPI data, and other state data resources.

### GUAM CONSUMER PRICE INDEX

1. Number of commodity items:

GROUP	GROUP WEIGHTS <sup>4</sup>	NO. OF ITEMS ALLOCATED
Food	15.60	69
Housing	32.11	42
Apparel & Upkeep	7.61	23
Transportation	8.60	4
Medical Care	20.42	5
Recreation	2.97	5
Education and Communication	2.77	6
Other Goods & Services	<u>9.92</u>	<u>11</u>
	100.0	165

2. Base period: 4<sup>th</sup> Quarter 2007 = 100

3. Formula:

The index is computed by using base-weighted arithmetic average of prices. The formula used is either in the weighted aggregated form,

$$I_{oi} = \frac{\sum p_i q_o}{\sum p_o q_o} \times 100$$

or its equivalent, the weighted average of price relatives,

$$I_{oi} = \frac{\sum p_o q_o \left( p_i / p_o \right)}{\sum p_o q_o} \times 100$$

where  $p_i$  = the price of the commodity in the reporting period.  
 $p_o$  = the price of the commodity in the base period, and  
 $q_o$  = the quantity of commodity sold in the base period.

4. Weights:

Based on the 2005 Household Income and Expenditure Survey (HIES)

**Guam Consumer Price Index (CPI)**  
**4th Quarter 2010**  
**Volume No. XXXVI, 4**

The Guam 2010 4th Quarter CPI of 110.9 shows a 1.4 percent increase over the 3rd quarter of 2010, and 4.1 percent when compared to the same period one year earlier. The All Items Less Food index increased by 1.7 percent, the Services index by 2.4 percent, the All Items Less Food and Energy index by 4.1 percent and the Commodities Less Food index by 0.6 percent, as compared to the 3rd quarter of 2010. The Energy index decreased by -3.7 percent, as compared to the 3rd quarter of 2010. The purchasing power of the dollar is now \$0.61 when compared to base year 1996. On average, the price level increased by 3.0 percent as compared to 2009.

The Food group index of 113.5 saw no change over the preceding quarter, but decreased -1.2 percent when compared to the same period one year earlier. Eggs product prices have increased 8.4 percent over the preceding quarter and 6.0 percent when compared to the same period one year earlier. Fresh Fruits product prices have increased 4.7 percent over the preceding quarter and 4.8 percent when compared to the same period one year earlier. Fresh Vegetables products prices have decreased -6.8 percent over the preceding quarter and -8.5 percent when compared to the same period one year earlier. Fish and Seafood product prices have decreased -4.8 percent over the preceding quarter and -16.3 percent when compared to the same period one year earlier.

The Housing group index of 110.8 shows a decrease of -2.3 percent over the preceding quarter, but increased 0.7 percent when compared to the same period one year earlier. Water, Sewer and Trash product prices have increased 3.0 percent over the preceding quarter and 4.4 percent when compared to the same period one year earlier. Appliances product prices have increased 5.0 percent over the preceding quarter and 14.8 percent when compared to the same period one year earlier. Furniture and Bedding product prices have decreased -5.1 percent over the preceding quarter and -8.5 percent when compared to the same period one year earlier.

The Transportation group index of 111.1 shows a decrease of -0.7 percent over the preceding quarter, but increased 4.7 percent when compared to the same period one year earlier. Car Maintenance product prices have increased 1.6 percent over the preceding quarter and 1.1 percent when compared to the same period one year earlier.

The Medical Care group index of 119.8 shows an increase of 10.4 percent over the preceding quarter and 13.3 percent when compared to the same period one year earlier. Hospital and Related Services product prices have increased 13.1 percent over the preceding quarter and 13.1 percent when compared to the same period one year earlier.

The Education and Communication index of 99.4 and Other Goods and Services index of 109.5 shows an increase of 0.6 and 4.6 percent, respectively over the preceding quarter. The Recreation group index of 94.9 and Apparel and Upkeep group index of 93.8 and shows a decrease of -6.5 and -2.2 percent, respectively over the preceding quarter.

Over 89 percent of all product prices across all groups and subgroups are included in this report.

**TABLE A**  
**CONSUMER PRICE INDEX**  
(4th Qtr. 2007 = 100.00)

GROUP	CY 2009 QUARTERS				CY 2010 QUARTERS			
	1st	2nd	3rd	4th	1st	2nd	3rd	4th
<b>ALL ITEMS</b>	105.6	105.4	106.9	106.5	107.8	108.9	109.4	110.9
FOOD	114.3	113.6	114.5	114.9	112.2	112.2	113.5	113.5
HOUSING	109.0	107.5	110.5	110.0	113.7	115.0	113.4	110.8
APPAREL & UPKEEP	101.6	101.6	103.0	95.1	95.7	98.0	95.9	93.8
TRANSPORTATION	101.5	102.6	104.0	106.1	106.8	107.3	111.9	111.1
MEDICAL CARE	101.6	102.1	103.8	105.7	105.7	105.7	108.5	119.8
RECREATION	101.9	102.7	102.1	101.1	101.4	100.6	101.5	94.9
EDUCATION & COMMUNICATION	98.7	99.3	99.2	98.8	98.9	98.5	98.8	99.4
OTHER GOODS & SERVICES	99.3	100.1	98.8	96.9	100.8	105.4	104.7	109.5
<b>SPECIAL INDEXES</b>								
ALL ITEMS LESS FOOD	104.0	103.8	105.5	105.0	107.0	108.3	108.6	110.4
ENERGY <sup>1</sup>	109.1	107.8	110.3	109.6	114.9	116.7	118.0	113.6
ALL ITEMS LESS FOOD AND ENERGY	102.0	102.3	103.6	103.1	103.8	104.9	104.8	109.1
COMMODITIES LESS FOOD	102.5	103.2	104.3	102.4	104.1	106.2	105.4	106.0
SERVICES	105.3	104.4	106.5	106.5	109.3	109.9	111.2	113.9
Purchase Power of Consumer								
Dollar (3rd Qtr. 1996 = 100.00)	.64	.65	.64	.64	.63	.62	.62	.61
Dollar (4th Qtr. 2007 = 100.00)	.95	.95	.94	.94	.93	.92	.91	.90

FOOTNOTE: "1" Index items selected by the Guam Energy Office

SOURCE: Cost of Living Section, Business and Economic Statistics Program, Bureau of Statistics and Plans, Government of Guam

**TABLE B**  
**CONSUMER PRICE INDEX**  
(4th Qtr. 2007 = 100.00)

GROUP	Relative Importance	Index	Index	Index	% Change to	
		for 4th Qtr. CY 2009	for 3rd Qtr. CY 2010	for 4th Qtr. CY 2010	4th Qtr. 2010 from	
					Previous Quarter	One Year Earlier
All Items	100.00	106.5	109.4	110.9	1.4%	4.1%
All Items Less Food	84.41	105.0	108.6	110.4	1.7%	5.1%
Energy <sup>1</sup>	24.09	109.6	118.0	113.6	-3.7%	3.6%
All Items Less Food and Energy	60.32	103.1	104.8	109.1	4.1%	5.8%
Commodities Less Food	37.54	102.4	105.4	106.0	0.6%	3.5%
Services	46.86	107.0	111.2	113.9	2.4%	6.4%

GROUP	Relative Importance	Index	Index	Index	% Change to	
		for 4th Qtr. CY 2009	for 3rd Qtr. CY 2010	for 4th Qtr. CY 2010	4th Qtr. 2010 from	
					Previous Quarter	One Year Earlier
<b>Food</b>	15.60	114.9	113.5	113.5	0.0%	-1.2%
Cereals and Cereal Products	1.37	142.2	117.3	120.5	2.7%	-15.3%
Bakery Products	0.47	114.7	119.4	120.5	0.9%	5.1%
Beef	1.57	95.0	112.0	111.9	-0.1%	17.8%
Pork	1.10	92.9	94.8	97.7	3.1%	5.2%
Other Meats	0.73	124.6	124.1	124.8	0.6%	0.2%
Poultry	2.20	110.4	112.3	111.3	-0.9%	0.8%
Fish and Seafood	1.19	148.7	130.8	124.5	-4.8%	-16.3%
Eggs	0.26	109.1	106.6	115.6	8.4%	6.0%
Dairy Products	0.70	107.3	111.3	110.6	-0.6%	3.1%
Fresh Fruits	0.71	99.6	99.7	104.4	4.7%	4.8%
Fresh Vegetables	1.01	108.5	106.5	99.3	-6.8%	-8.5%
Juice and Non-Alcoholic Drinks	1.53	108.9	105.7	106.7	0.9%	-2.0%
Sugar and Sweets	0.25	125.8	132.7	131.3	-1.1%	4.4%
Fats and Oils	0.13	131.0	145.9	137.0	-6.1%	4.6%
Other Foods	1.47	118.1	116.5	118.7	1.9%	0.5%
Meals Away from Home	0.66	120.4	122.8	123.8	0.8%	2.8%
Alcoholic Beverages	0.25	117.2	120.4	120.3	-0.1%	2.6%

FOOTNOTE: "1" Index items selected by the Guam Energy Office

SOURCE: Cost of Living Section, Business and Economic Statistics Program, Bureau of Statistics and Plans, Government of Guam

**TABLE B**  
**(continued)**

GROUP	Relative Importance	Index for 4th Qtr.	Index for 3rd Qtr.	Index for 4th Qtr.	% Change to 4th Qtr. 2010 from	
		CY 2009	CY 2010	CY 2010	Previous Quarter	One Year Earlier
<b>HOUSING</b>	32.11	110.0	113.4	110.8	-2.3%	0.7%
Rent and Lodging	5.13	100.3	101.1	103.5	2.4%	3.2%
Home Fuel	3.22	120.2	129.3	128.6	-0.5%	7.0%
Electricity	8.09	105.3	119.4	105.6	-11.6%	0.3%
Water, Sewer and Trash	3.37	126.0	127.7	131.5	3.0%	4.4%
Floor Coverings	0.17	86.7	89.7	89.6	-0.1%	3.3%
Furniture and Bedding	0.75	84.7	81.7	77.5	-5.1%	-8.5%
Appliances	0.93	110.5	120.8	126.8	5.0%	14.8%
Tools, Hardware, Outdoor Equip.	0.91	105.3	107.6	106.4	-1.1%	1.0%
Housekeeping Supplies	7.95	110.8	103.9	104.6	0.7%	-5.6%
Housekeeping Operations	1.58	122.6	125.1	121.9	-2.6%	-0.6%

SOURCE: Cost of Living Section, Business and Economic Statistics Program, Bureau of Statistics and Plans, Government of Guam

**TABLE B**  
(continued)

GROUP	Relative Importance	Index for 4th Qtr.	Index for 3rd Qtr.	Index for 4th Qtr.	% Change to 4th Qtr. 2010 from	
		CY 2009	CY 2010	CY 2010	Previous Quarter	One Year Earlier
<b>APPAREL &amp; UPKEEP</b>	7.61	95.1	95.9	93.8	-2.2%	-1.4%
Men's Apparel	2.09	97.2	99.5	97.7	-1.8%	0.5%
Boy's Apparel	0.54	99.8	105.8	106.2	0.4%	6.4%
Women's Apparel	2.03	99.1	97.2	90.5	-6.9%	-8.7%
Girl's Apparel	0.33	94.1	69.3	54.0	-22.1%	-42.6%
Footwear	1.37	90.6	91.9	92.4	0.5%	2.0%
Infant's & Toddler's Apparel	0.38	98.4	96.0	103.8	8.1%	5.5%
Jewelry	0.87	83.5	94.6	96.8	2.3%	15.9%

GROUP	Relative Importance	Index for 4th Qtr.	Index for 3rd Qtr.	Index for 4th Qtr.	% Change to 4th Qtr. 2010 from	
		CY 2009	CY 2010	CY 2010	Previous Quarter	One Year Earlier
<b>TRANSPORTATION</b>	8.6	106.1	111.9	111.1	-0.7%	4.7%
New Cars	5.2	111.1	117.8	115.9	-1.6%	4.3%
Motor Fuel	1.4	89.5	100.3	101.6	1.3%	13.5%
Car Maintenance	1.0	110.0	109.5	111.2	1.6%	1.1%
Car Insurance	1.0	100.2	100.2	100.2	0.0%	0.0%

SOURCE: Cost of Living Section, Business and Economic Statistics Program, Bureau of Statistics and Plans, Government of Guam



**TABLE B**  
(continued)

GROUP	Relative Importance	Index for 4th Qtr. CY 2009	Index for 3rd Qtr. CY 2010	Index for 4th Qtr. CY 2010	% Change to 4th Qtr. 2010 from	
					Previous Quarter	One Year Earlier
<b>MEDICAL CARE</b>	20.42	105.7	108.5	119.8	10.4%	13.3%
Prescription Drugs	0.67	131.0	131.8	131.8	0.0%	0.6%
Physician Services	2.07	107.3	135.1	130.9	-3.1%	22.0%
Other Medical Practitioner Costs	0.47	116.4	116.4	124.3	6.8%	6.8%
Hospital and Related Services	17.22	104.2	104.2	117.9	13.1%	13.1%

GROUP	Relative Importance	Index for 4th Qtr. CY 2009	Index for 3rd Qtr. CY 2010	Index for 4th Qtr. CY 2010	% Change to 4th Qtr. 2010 from	
					Previous Quarter	One Year Earlier
<b>RECREATION</b>	2.97	101.1	101.5	94.9	-6.5%	-6.1%
Audio and Video	2.63	100.3	100.4	93.2	-7.2%	-7.1%
Pet and Pet Products	0.19	112.6	115.0	113.8	-1.0%	1.1%
Sporting Goods	0.14	99.4	103.4	101.6	-1.7%	2.2%

SOURCE: Cost of Living Section, Business and Economic Statistics Program, Bureau of Statistics and Plans, Government of Guam

**TABLE B**  
(continued)

GROUP	Relative Importance	Index	Index	Index	% Change to	
		for 4th Qtr. CY 2009	for 3rd Qtr. CY 2010	for 4th Qtr. CY 2010	4th Qtr. 2010 from Previous Quarter	
						One Year Earlier
<b>EDUCATION &amp; COMMUNICATION</b>	2.77	98.8	98.8	99.4	0.6%	0.6%
Educational Books & Supplies	0.18	107.9	108.8	108.8	0.0%	0.8%
Tuition & Other School Fees	0.38	104.0	105.9	105.9	0.0%	1.8%
Telephone Services	1.48	100.5	100.8	100.5	-0.3%	0.0%
Computers	0.34	79.5	75.6	81.9	8.3%	3.0%
Internet Services	0.39	100.0	100.0	100.0	0.0%	0.0%

GROUP	Relative Importance	Index	Index	Index	% Change to	
		for 4th Qtr. CY 2009	for 3rd Qtr. CY 2010	for 4th Qtr. CY 2010	4th Qtr. 2010 from Previous Quarter	
						One Year Earlier
<b>OTHER GOODS &amp; SERVICES</b>	9.92	96.9	104.7	109.5	4.6%	13.0%
Tobacco Products	1.04	101.5	166.2	183.1	10.2%	80.4%
Personal Care Products	5.36	84.7	85.7	91.4	6.7%	7.9%
Personal Care Services	0.66	109.8	113.1	107.3	-5.1%	-2.3%
Miscellaneous Personal Services	0.16	86.7	98.0	106.7	8.9%	23.1%
Funeral Expenses	0.93	114.6	114.6	114.6	0.0%	0.0%
Financial Services	0.47	105.9	108.9	112.5	3.3%	6.2%
Other Special Occasions	1.31	121.7	121.7	121.7	0.0%	0.0%

SOURCE: Cost of Living Section, Business and Economic Statistics Program, Bureau of Statistics and Plans, Government of Guam

TABLE C

**CONSUMER PRICE INDEX (CPI)**  
(4th Qtr. 2007 = 100.00)

Rebased Indexes<sup>2</sup>, Average Annual Percent Change

Calendar Year	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Annual Average	Average Annual Percent Change
1996	66.0	67.5	67.6	68.2	67.3	
1997	68.8	68.6	68.2	68.9	68.6	1.9%
1998	69.0	68.0	67.9	67.7	68.2	-0.6%
1999	68.6	68.9	70.1	70.2	69.4	1.8%
2000	71.2	71.4	70.4	70.2	70.8	2.0%
2001	70.6	70.4	69.2	69.1	69.8	-1.4%
2002	69.8	69.8	70.0	71.5	70.3	0.6%
2003	70.3	72.3	72.7	73.5	72.2	2.7%
2004	74.7	76.0	77.1	78.6	76.6	6.1%
2005	79.3	80.9	81.5	88.1	82.5	7.7%
2006	88.8	91.3	92.4	95.5	92.0	11.6%
2007	97.2	98.1	97.6	100.0	98.2	6.8%
2008	101.1	104.1	106.0	106.1	104.3	6.2%
2009	105.6	105.4	106.9	106.5	106.1	1.7%
2010	107.8	108.9	109.4	110.9	109.3	3.0%

FOOTNOTE: "2" See page (i) Example II, for the discussion on rebasing indexes.

SOURCE: Cost of Living Section, Business and Economic Statistics Program, Bureau of Statistics and Plans, Government of Guam

Bureau of Statistics and Plans  
Government of Guam  
P. O. Box 2950  
Hagatna, Guam 96932  
Tel: (671) 472-4201, 475-9683  
Fax: (671) 477-1812  
Website: [www.bsp.guam.gov](http://www.bsp.guam.gov)  
email: [albert.perez@bsp.guam.gov](mailto:albert.perez@bsp.guam.gov)