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# ***GUAM CONSUMER PRICE INDEX***

Cost of Living Section

4th QUARTER 2009  
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## **Bureau of Statistics and Plans Business and Economic Statistics Program Government of Guam**

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**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	9.92	11
	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,

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

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 2009**

**Volume No. XXXV, 4**

The Guam 2009 4th Quarter CPI of 106.5 shows a -0.4 percent decrease over the 3rd quarter of 2009, and an increase of 0.4 percent when compared to the same period one year earlier. The All Items Less Food index decreased by -0.5 percent, Energy by -0.6 percent, All Items Less Food and Energy by -0.5 percent, Commodities Less Food by -1.8 percent, and the Services index increased by 0.5 percent, as compared to the 3rd quarter of 2009. The purchasing power of the dollar is now \$0.64 when compared to base year 1996. On average, the price level increased by 1.7 percent as compared to 2008.

The Food group index of 114.9 shows an increase of 0.3 percent over the preceding quarter and 2.2 percent when compared to the same period one year earlier. Fresh Fruit product prices have increased 9.2 percent over the preceding quarter, but decreased -7.2 percent when compared to the same period one year earlier. Eggs product prices have increased 8.9 percent over the preceding quarter, but decreased -7.9 percent when compared to the same period one year earlier. Cereals and Cereal Products prices have decreased -5.5 percent over the preceding quarter and -5.8 percent when compared to the same period one year earlier. Fish and Seafood product prices have increased 2.4 percent over the preceding quarter and 14.6 percent when compared to the same period one year earlier.

The Housing group index of 110.0 shows a decrease of -0.5 percent over the preceding quarter and -2.0 percent when compared to the same period one year earlier. Water, Sewer and Trash product prices have increased 0.3 percent over the preceding quarter and 22.4 percent when compared to the same period one year earlier. Electricity product prices have decreased -3.3 percent over the preceding quarter and -21.8 percent when compared to the same period one year earlier. Housekeeping Operations product prices have increased 5.0 over the preceding quarter and 15.2 percent when compared to the same period one year earlier.

The Transportation group index of 106.1 shows an increase of 2.0 percent over the preceding quarter and 5.0 percent when compared to the same period one year earlier. The Car Maintenance product prices have increased 3.6 percent over the preceding quarter and 2.1 percent when compared to the same period one year earlier.

The Apparel and Upkeep group index of 95.1 and the Recreation group index of 101.1, shows a decrease of -7.7 and -1.0 percent respectively, over the preceding quarter. The Medical Care group index of 105.7 shows an increase of 1.8 percent over the preceding quarter.

The Education and Communication group index of 98.8 and Other Goods and Services group index of 96.9, shows a decrease of -0.4 and -1.9 percent respectfully, over the previous quarter.

Over 90 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 2008 QUARTERS				CY 2009 QUARTERS			
	1st	2nd	3rd	4th	1st	2nd	3rd	4th
<b>ALL ITEMS</b>	101.1	104.1	106.0	106.1	105.6	105.4	106.9	106.5
FOOD	101.2	105.4	110.5	112.4	114.3	113.6	114.5	114.9
HOUSING	101.0	106.3	108.8	112.2	109.0	107.5	110.5	110.0
APPAREL & UPKEEP	100.9	102.7	104.2	103.3	101.6	101.6	103.0	95.1
TRANSPORTATION	103.6	107.4	106.8	101.0	101.5	102.6	104.0	106.1
MEDICAL CARE	100.8	100.7	100.7	100.8	101.6	102.1	103.8	105.7
RECREATION	101.4	101.4	102.7	101.0	101.9	102.7	102.1	101.1
EDUCATION & COMMUNICATION	100.1	100.3	101.0	98.6	98.7	99.3	99.2	98.8
OTHER GOODS & SERVICES	100.6	101.4	103.3	97.7	99.3	100.1	98.8	96.9
<b>SPECIAL INDEXES</b>								
ALL ITEMS LESS FOOD	101.1	103.8	105.1	105.0	104.0	103.8	105.5	105.0
ENERGY <sup>1</sup>	102.7	109.5	113.7	114.8	109.1	107.8	110.3	109.6
ALL ITEMS LESS FOOD AND ENERGY	100.5	101.5	101.7	101.0	102.0	102.3	103.6	103.1
COMMODITIES LESS FOOD	102.0	104.3	104.5	101.6	102.5	103.2	104.3	102.4
SERVICES	100.4	103.4	105.6	107.6	105.3	104.4	106.5	106.5
Purchase Power of Consumer								
Dollar (3rd Qtr. 1996 = 100.00)	.67	.65	.64	.64	.64	.65	.64	.64
Dollar (4th Qtr. 2007 = 100.00)	.99	.96	.94	.94	.95	.95	.94	.94

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 2008	for 3rd Qtr. CY 2009	for 4th Qtr. CY 2009	4th Qtr. 2009 from	
					Previous Quarter	One Year Earlier
All Items	100.00	106.1	106.9	106.5	-0.4%	0.4%
All Items Less Food	84.41	105.0	105.5	105.0	-0.5%	0.0%
Energy <sup>1</sup>	24.09	114.8	110.3	109.6	-0.6%	-4.5%
All Items Less Food and Energy	60.32	101.0	103.6	103.1	-0.5%	2.1%
Commodities Less Food	37.54	101.6	104.3	102.4	-1.8%	0.8%
Services	46.86	107.6	106.5	107.0	0.5%	-0.6%

GROUP	Relative Importance	Index	Index	Index	% Change to	
		for 4th Qtr. CY 2008	for 3rd Qtr. CY 2009	for 4th Qtr. CY 2009	4th Qtr. 2009 from	
					Previous Quarter	One Year Earlier
<b>Food</b>	15.60	112.4	114.5	114.9	0.3%	2.2%
Cereals and Cereal Products	1.37	151.0	150.5	142.2	-5.5%	-5.8%
Bakery Products	0.47	111.1	115.3	114.7	-0.5%	3.2%
Beef	1.57	96.5	97.4	95.0	-2.5%	-1.6%
Pork	1.10	103.2	89.6	92.9	3.7%	-10.0%
Other Meats	0.73	112.6	125.2	124.6	-0.5%	10.7%
Poultry	2.20	102.8	110.6	110.4	-0.2%	7.4%
Fish and Seafood	1.19	129.7	145.2	148.7	2.4%	14.6%
Eggs	0.26	118.4	100.2	109.1	8.9%	-7.9%
Dairy Products	0.70	107.3	106.6	107.3	0.7%	0.0%
Fresh Fruits	0.71	107.3	91.2	99.6	9.2%	-7.2%
Fresh Vegetables	1.01	103.7	106.8	108.5	1.6%	4.6%
Juice and Non-Alcoholic Drinks	1.53	109.9	108.3	108.9	0.6%	-0.9%
Sugar and Sweets	0.25	105.6	124.7	125.8	0.9%	19.1%
Fats and Oils	0.13	139.6	131.6	131.0	-0.5%	-6.2%
Other Foods	1.47	111.6	116.4	118.1	1.5%	5.8%
Meals Away from Home	0.66	115.2	119.9	120.4	0.4%	4.5%
Alcoholic Beverages	0.25	111.1	117.2	117.2	0.0%	5.5%

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	Index	Index	% Change to	
		for 4th Qtr. CY 2008	for 3rd Qtr. CY 2009	for 4th Qtr. CY 2009	4th Qtr. 2009 from Previous Quarter	One Year Earlier
<b>HOUSING</b>	32.11	112.2	110.5	110.0	-0.5%	-2.0%
Rent and Lodging	5.13	100.6	100.4	100.3	-0.1%	-0.3%
Home Fuel	3.22	120.8	118.6	120.2	1.3%	-0.5%
Electricity	8.09	134.7	108.9	105.3	-3.3%	-21.8%
Water, Sewer and Trash	3.37	102.9	125.6	126.0	0.3%	22.4%
Floor Coverings	0.17	102.6	102.5	86.7	-15.4%	-15.5%
Furniture and Bedding	0.75	100.3	87.2	84.7	-2.9%	-15.6%
Appliances	0.93	108.2	116.4	110.5	-5.1%	2.1%
Tools, Hardware, Outdoor Equip.	0.91	101.7	102.5	105.3	2.7%	3.5%
Housekeeping Supplies	7.95	101.6	110.5	110.8	0.3%	9.1%
Housekeeping Operations	1.58	106.4	116.8	122.6	5.0%	15.2%

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 2008	for 3rd Qtr. CY 2009	for 4th Qtr. CY 2009	4th Qtr. 2009 from	
					Previous Quarter	One Year Earlier
<b>APPAREL &amp; UPKEEP</b>	7.61	103.3	103.0	95.1	-7.7%	-7.9%
Men's Apparel	2.09	100.7	101.8	97.2	-4.5%	-3.5%
Boy's Apparel	0.54	105.3	94.0	99.8	6.2%	-5.2%
Women's Apparel	2.03	103.2	102.7	99.1	-3.5%	-4.0%
Girl's Apparel	0.33	108.1	112.7	94.1	-16.5%	-13.0%
Footwear	1.37	90.4	90.9	90.6	-0.3%	0.2%
Infant's & Toddler's Apparel	0.38	98.1	98.1	98.4	0.3%	0.3%
Jewelry	0.87	129.3	129.5	83.5	-35.5%	-35.4%

GROUP	Relative Importance	Index	Index	Index	% Change to	
		for 4th Qtr. CY 2008	for 3rd Qtr. CY 2009	for 4th Qtr. CY 2009	4th Qtr. 2009 from	
					Previous Quarter	One Year Earlier
<b>TRANSPORTATION</b>	8.6	101.0	104.0	106.1	2.0%	5.0%
New Cars	5.2	105.6	108.3	111.1	2.6%	5.2%
Motor Fuel	1.4	80.2	89.5	89.5	0.0%	11.6%
Car Maintenance	1.0	107.7	106.2	110.0	3.6%	2.1%
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	Index	Index	% Change to	
		for 4th Qtr. CY 2008	for 3rd Qtr. CY 2009	for 4th Qtr. CY 2009	4th Qtr. 2009 from	
					Previous Quarter	One Year Earlier
<b>MEDICAL CARE</b>	20.42	100.8	103.8	105.7	1.8%	4.9%
Prescription Drugs	0.67	107.4	131.0	131.0	0.0%	22.0%
Physician Services	2.07	102.9	123.9	107.3	-13.4%	4.3%
Other Medical Practitioner Costs	0.47	114.2	116.4	116.4	0.0%	1.9%
Hospital and Related Services	17.22	100.0	100.0	104.2	4.2%	4.2%

GROUP	Relative Importance	Index	Index	Index	% Change to	
		for 4th Qtr. CY 2008	for 3rd Qtr. CY 2009	for 4th Qtr. CY 2009	4th Qtr. 2009 from	
					Previous Quarter	One Year Earlier
<b>RECREATION</b>	2.97	101.0	102.1	101.1	-1.0%	0.1%
Audio and Video	2.63	100.7	101.5	100.3	-1.2%	-0.4%
Pet and Pet Products	0.19	104.8	111.3	112.6	1.2%	7.4%
Sporting Goods	0.14	101.7	99.4	99.4	0.0%	-2.3%

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 2008	for 3rd Qtr. CY 2009	for 4th Qtr. CY 2009	4th Qtr. 2009 from Previous Quarter      One Year Earlier	
<b>EDUCATION &amp; COMMUNICATION</b>	2.77	98.6	99.2	98.8	-0.4%	0.2%
Educational Books & Supplies	0.18	112.6	107.9	107.9	0.0%	-4.2%
Tuition & Other School Fees	0.38	100.5	104.0	104.0	0.0%	3.5%
Telephone Services	1.48	100.1	100.5	100.5	0.0%	0.4%
Computers	0.34	80.7	82.9	79.5	-4.1%	-1.5%
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 2008	for 3rd Qtr. CY 2009	for 4th Qtr. CY 2009	4th Qtr. 2009 from Previous Quarter      One Year Earlier	
<b>OTHER GOODS &amp; SERVICES</b>	9.92	97.7	98.8	96.9	-1.9%	-0.8%
Tobacco Products	1.04	101.5	101.5	101.5	0.0%	0.0%
Personal Care Products	5.36	89.3	88.8	84.7	-4.6%	-5.2%
Personal Care Services	0.66	106.5	106.5	109.8	3.1%	3.1%
Miscellaneous Personal Services	0.16	90.0	86.7	86.7	0.0%	-3.7%
Funeral Expenses	0.93	114.3	114.6	114.6	0.0%	0.3%
Financial Services	0.47	102.6	105.9	105.9	0.0%	3.2%
Other Special Occasions	1.31	111.6	121.7	121.7	0.0%	9.1%

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%

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

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