

EXHIBIT HH



APPENDIX

C**The 4 Percent Benchmark for Affordability**

The Environmental Protection Agency has never adopted a measure to indicate how much an individual household can pay for water services before they become unaffordable. Yet participants in the current debate use (and attribute to EPA) the assumption that any household with water bills in excess of 4 percent of its income is experiencing a hardship. In adopting that notion, they mistakenly apply to individual households "affordability criteria" that the agency developed for whole water systems.

The distinction is important because EPA's criteria compare the revenues collected by a water system to the median household income (MHI) in a service area, not to individual household income. Certainly, average household costs that correspond to 4 percent of a community's MHI represent an even higher percentage of the income of an individual household earning less than the median. Thus, EPA's (subjective) judgment that 4 percent of MHI is a reasonable ceiling on a water system's yield does not translate into a judgment that each individual household served by that system should pay no more than 4 percent of its income for water services.

The 4 percent benchmark reflects EPA's separate figures of 2 percent each for wastewater and drinking water. The origins of those individual figures highlight the subjectivity inherent in setting affordability criteria.

EPA's Affordability Criterion for Wastewater Systems

EPA's guidance on the affordability of investment in wastewater systems uses an average household rate of 2 percent of MHI as one assessment factor in conjunction with measures of the system's debt, socioeconomic conditions of the area, and financial management conditions.⁽¹⁾ The focus on affordability at the system level is also reflected in the guidance's reference to a 1988 study examining municipal governments' ability to issue revenue bonds to finance environmental compliance. EPA assumed that lending institutions would initially be reluctant to accept ratios of user fees to income that were much above those already in existence in most communities, but the agency was clearly not concerned about whether individual households could afford higher rates--it asserted that as new environmental regulations gained wider acceptance, lenders would not be put off by higher ratios.⁽²⁾

EPA's Affordability Criterion for Drinking Water Systems

EPA was led to establish an affordability criterion for drinking water systems by the 1996 Amendments to the Safe Drinking Water Act. The amendments specified that small public drinking water systems would be allowed to use less effective pollutant control technologies when designated technologies capable of achieving a maximum contaminant level for a pollutant or satisfying a treatment technique requirement were not "affordable." EPA judged that a technology was not affordable for a small system if the associated average expense per household served exceeded 2 percent of the service area's MHI.

EPA settled on 2 percent after seeking a value that would be "closer to the cost of other utilities, and not significantly less than the cost of specific discretionary items."⁽³⁾

Consumer expenditures on alcohol and tobacco represented 1.5 percent of 1995 pretax MHI, and expenditures on energy and fuels accounted for 3.3 percent.⁽⁴⁾ From that range, the agency selected 2 percent, in part because it was roughly consistent with the premium that some households were choosing to pay when installing a drinking water treatment device or purchasing bottled water.⁽⁵⁾

EPA recently decided to raise the value to 2.5 percent of MHI, which highlights the subjective underpinnings of the agency's affordability criterion. The change allows EPA to designate point-of-use treatment devices as "compliance technologies" because it ensures that average household charges by small systems installing such devices would remain below the affordability criterion. In effect, the change limits the recourse of small drinking water systems to less effective pollutant control technologies.

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1. See Environmental Protection Agency, Office of Water, Office of Wastewater Management, "Combined Sewer Overflows--Guidance for Financial Capability Assessment and Schedule Development," EPA 832-B-97-004 (February 1997).
 2. Financial markets do not use a household-level affordability criterion in determining a system's overall financial condition and credit capacity. But they do consider whether rates that are comparatively low for a region may constrain asset maintenance and whether rates that are too high may limit expansion of the industrial customer base. Rate assessments allow for timely capital improvement plans and rates that reflect the full cost of service. In addition to rates, financial analysts examine the diversity and breadth of a system's customer base, the strength of the local economy, the system's governance and organizational structure, the quality of its management and strategic focus, and its liquidity. See Mary Francoeur, Chee Mee Hu, and Thomas Paolicelli, *Rating Methodology: Analytical Framework for Water and Sewer System Ratings* (Moody's Investor Service, Municipal Credit Research, August 1999). Conversation with Chee Mee Hu, December 17, 2001.
 3. See International Consultants and others, "National Level Affordability Criteria Under the 1996 Amendments to the Safe Drinking Water Act (Final Draft Report)," USEPA Contract 68-C6-0039 (August 1998), pp. 6-2, 4-6; and Environmental Protection Agency, Office of Water, "Variance Technology Findings for Contaminants Regulated Before 1996," EPA 815-R-98-003 (September 1998), p. 19.
 4. Environmental Protection Agency, Office of Water, "Variance Technology Findings," p. 45.
 5. International Consultants, "National Level Affordability Criteria," p. 4-3.

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 **EPA AFFORDABILITY CRITERIA
FOR SMALL DRINKING
WATER SYSTEMS: AN
EPA SCIENCE ADVISORY
BOARD REPORT**

**A REPORT BY THE
ENVIRONMENTAL ECONOMICS
ADVISORY COMMITTEE OF THE
EPA SCIENCE ADVISORY
BOARD (SAB)**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

December 30, 2002

OFFICE OF THE ADMINISTRATOR
SCIENCE ADVISORY BOARD

EPA-SAB-EEAC-03-004

Honorable Christine Todd Whitman
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Subject: Affordability Criteria for Small Drinking Water Systems: An EPA Science
Advisory Board Report

Dear Governor Whitman:

The Environmental Economics Advisory Committee (EEAC) of EPA's Science Advisory Board (SAB) met on June 13, 2002, and again on August 12, 2002 to review a number of aspects associated with the Agency's affordability criteria that is used to determine the availability of small drinking water system variances under the Safe Drinking Water Act.

The charge to the SAB's Environmental Economics Advisory Committee asked for advice in four general areas. 1) EPA's basic approach to determining affordability for small systems (i.e., comparing average compliance costs with an expenditure margin), 2) components of the affordability determination method (i.e., use of median household income, alternatives to the 2.5% affordability threshold, calculation of the expenditure baseline), 3) the application, focus and/or definition of affordability (i.e., the use of separate national level affordability criteria for ground water vs. surface water systems; the need for making affordable technology determinations on a regional rather than a national basis), and 4) whether financial assistance should be considered in EPA's national level affordability criteria.

In this letter, we highlight only a few of the EEAC's findings. First, the Committee believes that EPA's basic approach to assessing the affordability of National Primary Drinking Water Regulations (NPDWRs) for small systems is justified on the basis of equity and efficiency considerations, as well as considerations of administrative practicality. At the same time, the Agency should be aware of the limitations of this basic approach, and modify it where appropriate and possible.

In particular, the Agency should consider options of system consolidation, and take these into account when analyzing the nature and duration of any relaxation of drinking water quality requirements. In addition, the Agency should recognize that in light of significant existing heterogeneity among small systems, the use of a national trigger as a screening device suggests

the adoption of a fairly low affordability threshold. Partly because of this, the Committee encourages EPA to develop clear and formal guidelines about when variances should be granted at the local level, and the Committee encourages EPA to conduct research — to be shared with community water suppliers — into possible mechanisms for achieving greater equity in distribution of water costs to individuals.

If the basic approach is maintained, the Agency should consider lower measures than median income that better capture impacts on disadvantaged households, recognizing that the effect of such a lower percentile, either within water districts or across water districts, would be to make it easier to trigger the affordability threshold. The Agency should also consider lower percentages than the current 2.5% as the income percentage for the national level affordability threshold. We say this because the national affordability threshold has never been exceeded, but some small water systems appear to have genuinely struggled with costs, suggesting that the 2.5% rule is too high. However, a change should be made *only* in conjunction with the development of clear and formal guidelines about when variances should be provided at the local level.

We appreciate the opportunity to review and provide advice on the Agency's small system affordability criteria. The EPA Science Advisory Board would be pleased to further discuss any of the recommendations described in this report, and we look forward to your response.

Sincerely,

/Signed/

Dr. William Glaze, Chair
EPA Science Advisory Board

/Signed/

Dr. Robert N. Stavins, Chair
Environmental Economics Advisory Committee
EPA Science Advisory Board

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ABSTRACT

This report represents the conclusions and recommendations of the U.S. Environmental Protection Agency's Science Advisory Board regarding the EPA affordability criteria which determines whether variances shall be available to small systems as they implement maximum contaminant level regulations under the Safe Drinking Water Act. The Agency asked the SAB for advice on: 1) EPA's basic approach to determining affordability for small systems (i.e., comparing average compliance costs with an expenditure margin), 2) components of the affordability determination method (i.e., use of median household income, alternatives to the 2.5% affordability threshold, calculation of the expenditure baseline), 3) the application, focus and/or definition of affordability (i.e., the use of separate national level affordability criteria for ground water vs. surface water systems; the need for making affordable technology determinations on a regional rather than a national basis), and 4) whether financial assistance should be considered in EPA's national level affordability criteria.

The report presents the SAB's findings and recommendations on the Agency's charge questions. The report notes that Agency's basic approach is justified on the basis of equity and efficiency considerations, as well as considerations of administrative practicality. The SAB also addressed limitations of the basic approach and suggested EPA modify it where appropriate and possible. They encouraged the Agency to consider options of system consolidation when analyzing the nature and duration of any standards relaxation and noted that the use of a national trigger as a screening device suggests the adoption of a fairly low affordability threshold. The SAB encouraged EPA to develop clear and formal guidelines about when variances should be granted at the local level, and to conduct research into possible mechanisms for achieving greater equity in distribution of water costs to individuals. The report carries additional recommendations.

KEY WORDS: Affordability; Affordability Criteria; Variances; Small Systems; Community Water Systems; Compliance Technologies; MCLs; Safe Drinking Water Act

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1. BACKGROUND

1.1 Statutory Context and the Affordability Concept

When EPA establishes a National Primary Drinking Water Regulation (NPDWR) it must consider the impact of regulatory compliance on small community water systems (those with a service population of 10,000 or fewer). Major provisions for dealing with this issue are linked to the concept of "affordability." EPA must identify affordable "Small System Compliance Technologies" for each rule, and if affordable compliance technologies are not available, EPA must identify "Small System Variance Technologies" in lieu of compliance technologies. Even though the variance technologies may not achieve compliance with the Maximum Contaminant Level (MCL) -- the standard -- or Treatment Technique in the rule, the variance technology still must achieve the maximum reduction/inactivation that is affordable while considering system size and source water quality. Further, the variance technology must be "protective of public health." In addition, States are authorized to grant "Small System Variances" from the MCL/Treatment Technique for the life of the variance technology.

Affordability is a concept provided for in the Safe Drinking Water Act to assist in making decisions on the need for variance technologies and variances. EPA developed the National Level Affordability Criterion to be used in making the decision on whether affordable compliance technologies exist for small systems. EPA determines affordability of a rule through the following relationship:

$$EM = AT - B$$

where:

EM (Expenditure Margin) is the maximum increase that can be imposed by treatment and still be considered affordable),

AT (Affordability Threshold) is the upper limit for the cost of water bills including costs for treatment, distribution, and operation (the current Affordability threshold is 2.5% of Median Household Income -- MHI), and

B (Baseline component) is from current annual water bills and median household income.

If the projected compliance cost for the rule is less than the available expenditure margin then the technology is affordable.

The National Level Affordability Criteria determination was published in August 1998. EPA identified the Affordability Threshold of 2.5% MHI. Data sources used by EPA to develop the baseline component included the Community Water System Survey (CWSS) and the US Census. MHI was selected as the metric because EPA preferred using an average metric instead of a worst case. The threshold was tied to costs associated with other risk reduction activities that could be carried out at the household level. EPA contemplates updating the baseline data and the methodology.

EPA consulted with the Science Advisory Board's Drinking Water Committee (DWC) on the development of their affordability criterion during a June, 1998 meeting. The DWC decided

to prepare an Advisory as a result of that interaction (EPA SAB, 1999). Among other things, that Advisory stated that the documentation on the affordability criteria would benefit from "...additional input by economists and policy analysts."

1.2 The Charge

In the final charge (dated March 26, 2002) EPA asked the SAB to consider the economic issues associated with the methodology for developing their national-level affordability criteria, as well as the factors that were used to establish the criteria. Specifically, EPA asked that while, "Taking into consideration the structure of the Safe Drinking Water Act and the limitations of readily available data and information sources, what is the [SAB's] opinion of the Agency national level affordability criterion, [the] methodology for deriving the criterion, and [the] approach to applying that criterion to national primary drinking water regulations? As part of the committee's review EPA asked the SAB to respond to the following questions:

- a) What is the SAB's view of the Agency's basic approach of comparing average compliance costs for an NPDWR with an expenditure margin, which is derived as the difference between an affordability threshold and an expenditure baseline?
- b) If the basic approach is retained, should a measure other than median income that captures the impact on more disadvantaged households be used as the basis for the affordability threshold? If so, what alternative measures (for example 10th or 25th income percentile, poverty level income) should the Agency consider and why? What would be the likely effect of such alternatives on existing and future national level affordable technology determinations?
- c) What alternatives should the Agency consider to 2.5% as the income percentage for the national level affordability threshold and what would be the likely effect of such alternatives on existing and future national level affordable technology determinations? What basis should the Agency use to select from among such alternatives? Should the Agency use costs of other household goods and services or risk reduction activities as a basis for setting the affordability threshold as was done in the development of the current criteria?
- d) Does the Committee believe the Agency should consider other approaches to calculating the national "expenditure baseline" than those used by the Agency heretofore?
- e) Does the Committee believe that separate national level affordability criteria should be developed for ground water and surface water systems?
- f) Should the Agency include an evaluation of the potential availability of financial assistance (for example Drinking Water State Revolving Fund) in its national level affordability criteria? If so, how could the potential availability of such financial assistance that reduces household burden be taken into consideration?
- g) Is there a need for making affordable technology determinations on a regional rather than a national basis? Does adequate readily available information exist to support such an approach? EPA is still exploring the degree of flexibility afforded by SDWA to make regional determinations, but would appreciate the Committee's advice on whether such determinations are feasible and warranted.

1.3 Review Documents

EPA provided the SAB with the following documents that explain issues associated with the affordability criteria under the Safe Drinking Water Act.

- a) Report to Congress (March 2002)
- b) Final Arsenic in Drinking Water Rule (small systems excerpt)(January 2001)
- c) Small System Compliance Technology List for the Surface Water Treatment Rule and Total Coliform Rule (EPA 815-R-98-001)
- d) Small System Compliance Technology List for the Non-Microbial Contaminants Regulated Before 1996 (EPA 815-R-98-002)
- e) Variance Technology Findings for Contaminants Regulated Before 1996 (EPA 815-R-98-003)

2. CONSIDERATIONS AND RECOMMENDATIONS

2.1 General Conclusions

EPA's basic approach to assessing the "affordability" of National Primary Drinking Water Regulations (NPDWRs) for small systems is intended to address the reality that small systems frequently face higher costs of meeting given standards. If the anticipated cost of compliance would put small systems (on average, on a national basis) above an "affordability threshold," then such systems are allowed to apply for variances. The Committee finds that this basic approach is justified on the basis of equity and efficiency considerations, as well as considerations of administrative practicality.

Although EPA's basic approach has merit, the Agency should be aware of its limitations, and modify it where appropriate and possible. In particular, the Agency should consider options of system consolidation, and take these into account when analyzing the nature and duration of any relaxation of drinking water quality requirements. In addition, the Agency should recognize that in light of heterogeneity among small systems, the use of a national trigger as a screening device suggests the adoption of a fairly low affordability threshold. The Committee strongly encourages EPA to develop clear and formal guidelines about when variances should be granted at the local level, and the Committee encourages EPA to conduct research — to be shared with community water suppliers — into possible mechanisms for achieving greater equity in distribution of water costs to individuals.

If the basic approach is maintained, the Agency should consider measures other than median income that better capture impacts on disadvantaged households. Within-district income inequalities (to the extent that the poor are not protected from cost increases) and between-district income inequalities argue for the use of lower income percentiles than median income. The effect of such a lower percentile, either within water districts or across water districts, would be to make it easier to trigger the affordability threshold.

The Agency should also consider lower percentages than the current 2.5% as the income percentage for the national level affordability threshold. The national affordability threshold has never been exceeded, but some small water systems appear to have genuinely struggled with costs, suggesting that the 2.5% rule is too high. EPA should consider a lower percentage than 2.5, but a change should be made *only* in conjunction with the development of clear and formal guidelines about when variances should be provided at the local level.

Should the Agency consider other approaches to calculating the national "expenditure baseline?" The Committee finds that there is no better approach to calculating the national expenditure baseline, but it wishes to remind EPA that the national-level determination of affordability can serve only a screening function. Again, the Committee encourages the Agency to develop guidelines for the case-by-case assessment of affordability in individual water supply systems that seek a variance.

Finally, the Committee recommends that EPA make its affordable technology determinations on a regional — or even local — basis, rather than a national basis. Regional income measures and expenditure baselines would capture affordability relative to the resources available in a community more accurately than the current national values. On the other hand, continued reliance on a national affordability threshold is necessary to implement a fairness goal.

2.2 Responses to specific Charge questions.

2.2.1 Charge Question 1. What is the SAB's view of the Agency's basic approach of comparing average compliance costs for an NPDWR with an expenditure margin, which is derived as the difference between an affordability threshold and an expenditure baseline?

2.2.1.1 Overview

This question asks for the Environmental Economics Advisory Committee's (hereafter, the Committee's) view of EPA's basic approach to assessing the "affordability" of National Primary Drinking Water Regulations (NPDWRs) for small systems. EPA's basic approach is intended to address the reality that small systems frequently face higher costs of meeting the given standards. The basic approach is to allow small systems to apply for variances if the anticipated cost of compliance would put such systems (on average, on a national basis) above an "affordability threshold."

The Committee finds that the basic approach is justified on the basis of equity and efficiency considerations, as well as considerations of administrative practicality. At the same time, the EEAC recommends that the Agency consider some modifications of the basic approach to address important long-run efficiency issues and to deal more effectively with heterogeneity among small systems. These findings stem from attention to the following questions: (a) Is special treatment for small systems justified on the basis of equity and efficiency? (b) Is the special treatment afforded small systems under the basic approach superior to the alternative of Federal financial compensation to small systems? (c) Is it reasonable to employ a national "trigger" to allow for special treatment? Below we address each of these questions in turn.

2.2.1.2 Efficiency and Equity Issues

The Committee finds that efficiency considerations support the basic approach. We find that considerations of equity also support the basic approach, although — as discussed below — competing equity concerns would tend to favor an alternative approach.

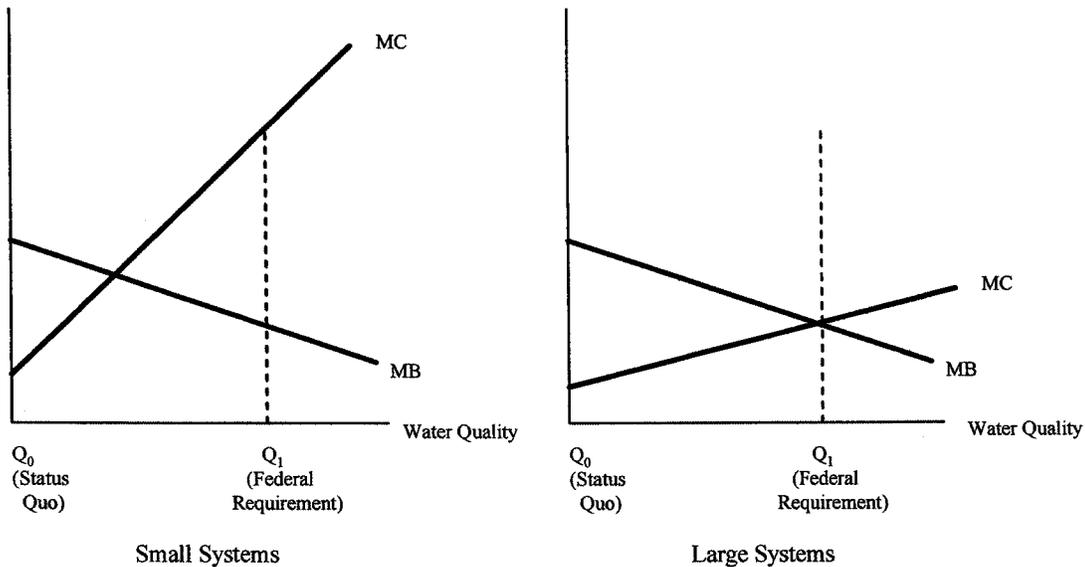
a) Significance of Differences in Cost, Income, and Benefits

The equity and efficiency issues are closely linked with differences between small and large systems in the costs and benefits of improvements in drinking water quality, as well as differences in average incomes. To clarify the issues, it is useful to begin with the simplest case, where the systems differ only in terms of cost of changes in drinking water quality, and then to move to more complex cases involving other differences as well. In all cases, it is assumed that the Federal standard enforces a level of water quality that for large systems is reasonably efficient (marginal costs are less than or equal to marginal benefits¹).

¹Marginal costs refer to the increment to total cost associated with a unit increase in drinking water quality improvement, and marginal benefits refer to the increment to total benefits associated with a unit increase in drinking water quality improvement. We display the marginal benefit curves as downward sloping to allow for the possibility that the marginal benefits or willingness to pay for drinking water quality declines with improvements in drinking water quality. The qualitative conclusions from this subsection are unchanged in the limiting case where the marginal benefit curves are flat (that is, where the willingness to pay for water quality is constant within the range of water quality under consideration).

Case 1: All systems (large and small) have identical marginal benefit schedules for improvements in drinking water quality, and identical average incomes of water customers. But small systems have higher marginal costs of achieving improvements in drinking water quality.

The situation is depicted in the figure below. Under these circumstances, it is inefficient for small systems to meet the same standard (Q_1) as the larger systems. Relaxing the drinking water quality requirement for small systems improves efficiency. Requiring small systems to meet the standard Q_1 may also be inequitable since small systems must pay greater unit costs than



Case 1

large systems but receive the same benefits per unit. Thus relaxing the requirement for small systems may also improve equity.

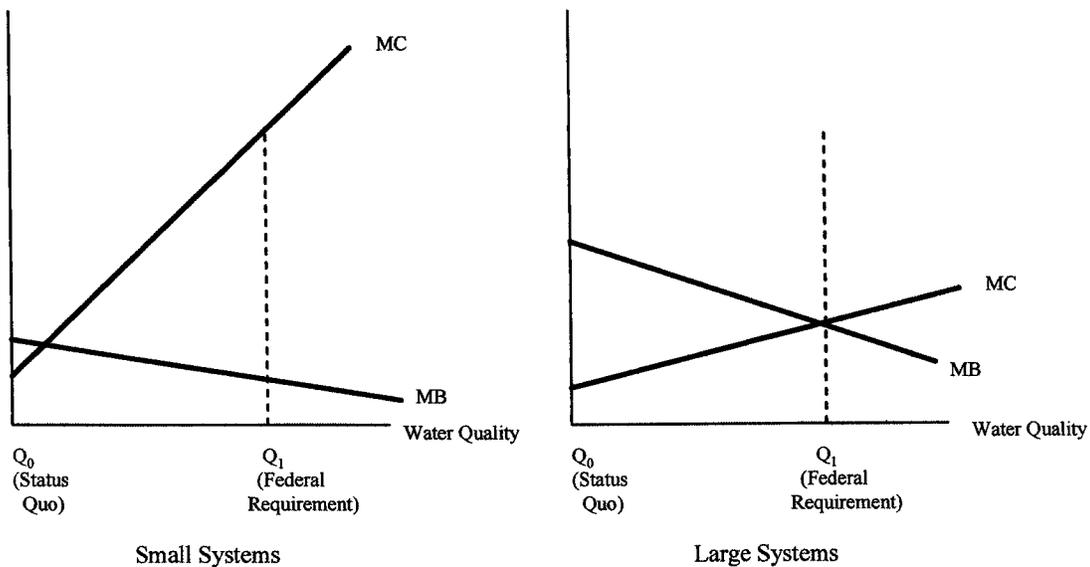
Case 2: Customers of small systems are assumed to have lower than average incomes than customers of larger systems. Otherwise same as Case 1.

By assumption, this case does not alter the marginal cost and marginal benefit curves relative to Case 1. Thus the efficiency argument is unchanged. But, relative to Case 1, the equity argument for modifying the requirement is strengthened in this case, since meeting the regulations would involve a greater relative income sacrifice for customers of small water systems.

Case 3: Marginal benefits of water quality are smaller, in general, for customers of small systems than customers of large systems. Otherwise same as Case 2.

In this case, the marginal benefit schedule, as well as the marginal cost schedule, is lower for small systems. The lower marginal benefit schedule could reflect the fact that customers of small systems have lower incomes and hence lower willingness to pay for water quality increases. The situation is depicted below.

This circumstance intensifies both the efficiency argument *and* the equity argument, relative to case 1. The lower Marginal Benefit schedule for the small systems intensifies the efficiency argument because now, for customers of small systems, the net benefits of meeting the Federal standard (Q_1) would be lower than in cases 1 and 2.



Case 3

Thus, under certain circumstances, both efficiency and equity considerations favor easing the requirements for small systems. To the extent that small systems have higher marginal costs, there is both an equity and efficiency basis for modifying the requirements for small systems. To the extent that average incomes are lower for customers of small systems, the equity argument is strengthened. To the extent that MB rises with income, the equity and efficiency arguments are strengthened further.

b) Safe Drinking Water as a Right

One might adopt the view that safe drinking water is a right that all citizens should enjoy. Whether or not safe drinking water is a right is fundamentally a question of equity. To the extent that this view is correct, the economic analysis changes. If safe drinking water is a right, then

property rights have changed and this right is now an asset owned by everyone, including people in small water systems in poor communities.

The change in property rights affects the efficiency calculation. In the previous analysis, where no basic right to clean water was assumed, efficiency calculations depended on individuals' willingness to pay for improved drinking water quality. In contrast, if it is assumed that people have a basic right to drinking water quality, then the efficiency calculations need refer to individuals' willingness to accept reduced drinking water quality – that is, the amount required to compensate them for each marginal reduction in that quality.

Under these circumstances the calculation of efficient levels of drinking water quality, in small and large systems, would be based on diagrams somewhat different from those used above. The diagrams would involve schedules for marginal required compensation (or willingness to accept) and marginal cost-savings, as functions of the *reduction* in drinking water quality. Efficiency is maximized where the marginal cost-saving from reduced use of resources for drinking water treatment equals the marginal required compensation (or willingness to accept) for reduced drinking water quality. In general, the marginal willingness to accept schedule lies above the marginal willingness to pay schedule considered earlier: hence the shift in the definition of rights implies that, other things equal, the efficient level of drinking water quality is higher.

The question of rights is related to the evaluation of Federal assistance as an alternative to the basic approach. We indicate its relevance in subsection 2.2.1.3 below.

c) Long-Run Efficiency Considerations

The basic approach could produce negative efficiency consequences over the longer term, because it could retard the movement toward efficient consolidation. The incentives to consolidate small, inefficient systems are weakened when such systems are granted variances from the Federal standards. The Committee recommends that the EPA review, on a case by case basis, the options for consolidation of small systems. In circumstances where consolidation is a viable long-run alternative for small systems, the EPA should take this into account in deciding the nature and duration of any relaxation of the drinking water quality requirements for these systems.

2.2.1.3 The Alternative of Financial Compensation

An alternative to the basic approach adopted by EPA would be Federal financial assistance to small communities to subsidize the cost of meeting drinking water quality standards, and thereby reduce costs to residents in areas using small systems.² We consider the attractiveness of this alternative in terms of equity, efficiency, and administrative practicality.

The alternative of Financial Assistance may find support from the viewpoint that safe drinking water is a basic right that all citizens should enjoy, and that the Federal government may have the responsibility to protect that right (or compensate individuals who lose this right). Under this viewpoint, the Federal government would be obligated either to provide financial assistance to enable localities to pay for water treatment that leads to safe drinking water, or alternatively to compensate localities to the extent that their right is not protected and they do not have high drinking water quality.

²This would be in addition to whatever financial assistance is already available.

The arguments for or against this viewpoint are mainly equity arguments. We cannot settle these equity issues here. However, we note that the loss of drinking water quality in small systems is sometimes due to activities by individuals or industry in the same localities. When the responsible parties are local, the argument that the Federal government (as opposed to other parties) has an obligation to compensate individuals or provide assistance seems weaker. Indeed, some would claim that Federal assistance is warranted only when there is no obvious other party that is responsible for degrading drinking water quality. In addition, we note that this alternative poses significant practical difficulties. Instituting such assistance would require a change in the statute, which would require an act of Congress. Such considerations seem to render this alternative less attractive than the basic approach.

2.2.1.4 The Usefulness of a National "Trigger"

Under the Agency's basic approach, small systems become eligible for consideration for variances if the costs for systems, on a nationwide basis, exceed an affordability threshold.³ If small systems collectively meet this condition, then a "trigger" is pulled in the sense that individual small systems can apply for a modification to the requirements. Given the considerable heterogeneity among small systems in terms of their costs and benefits, as well as the incomes of local customers, the use of a national trigger based on national averages is problematic. Ideally, it would be better to allow all water supply systems to apply for special relief from the Federal requirements, and consider every applicant on a case-by-case basis. But it may be necessary to employ this initial eligibility approach in order to reduce administrative costs.

The use of this national "trigger" justifies setting the affordability threshold based on considerations of heterogeneity. When a national trigger is employed, the risk exists that small systems as a whole will not face costs that entitle them to apply for modified rules, even though particular small systems face costs well in excess of the affordability threshold. In this case, certain small systems would not be able to apply for modifications to the regulations, even though their costs are well above the threshold. For this reason, the affordability threshold should be relatively easy to reach, to avoid the possibility of penalizing particularly costly small systems. A balance needs to be struck between the desire to screen applicants and the desire to avoid excluding particularly high-cost systems.

2.2.1.5 Summary

In sum, the Committee finds that the basic approach has merit. Efficiency and equity considerations tend to support this approach. Moreover, this approach seems superior to the alternative of providing financial compensation to small systems.

The Agency should be aware of limitations to the basic approach, however, and modify it where possible. In particular, the Agency should consider options of system consolidation, and take this into account when considering the nature and duration of any relaxation of drinking water quality requirements. In addition, the Agency should recognize that in light of the heterogeneity among small systems the use of a national trigger as a screening device suggests the adoption of a fairly low affordability threshold.

³Note that the application of variance technologies may still cause significant cost increases for some systems, partly because some systems may have no treatment *ex ante*.

The Committee encourages EPA to develop clear and formal guidelines about when variances should be granted at the local level. In addition, the Committee encourages EPA to conduct research — to be shared with community water suppliers — into possible mechanisms for achieving greater equity in distribution of water costs to individuals. In particular, EPA could provide suggestions to local authorities for alternative pricing mechanisms, such as lifeline rates,⁴ as instruments for easing the financial burden on low income households.

2.2.2 Charge Question 2. If the basic approach is retained, should a measure other than median income that captures the impact on more disadvantaged households be used as the basis for the affordability threshold? If so, what alternative measures (for example 10th or 25th income percentile, poverty level income) should the Agency consider and why? What would be the likely effect of such alternatives on existing and future national level affordable technology determinations?

2.2.2.1. Measures other than Median. If the basic approach is retained, should a measure other than median income that captures the impact on more disadvantaged households be used as the basis for the affordability threshold?

There are grounds for consideration of measures other than median income. The first concern about using median income arises from income inequality within water districts. Water bills are paid at the household level. Even if the median household can afford to pay the increased water bill, poorer households within a water district may find it unaffordable. This argues for considering the use of a lower percentile than the median. On the other hand, using a lower threshold might reduce drinking water quality for more affluent members of a community who may want cleaner water enough to be willing to pay fully for the attendant costs. Alternative funding mechanisms — such as lifeline rates — could be an effective means of distributing costs to non-low-income households. In this case, the aggregate affordability for the water district is the issue, which would argue for median (or even mean) household income.

A second concern about using median income as the basis for the affordability threshold arises from income inequality across water districts within a size class. EPA makes a national level determination for all water districts within a size class. As long as the median household income for all water districts in a given size class is high enough, then no water district within that size class may be considered for a variance. This result holds even though the increase in water bills may far exceed 2.5% of median household income for some water districts within the size class. Income inequality across water districts within a size class is particularly troublesome, because there is no easy way to protect poor districts, as there is with poor households within a water district through redistributing costs among households.⁵

⁴Lifeline rates refer to block pricing structures, sometimes employed with electricity, whereby the first block — intended to represent what may be considered to be “essential uses” of electricity — is priced very modestly in an effort to protect low-income households.

⁵An alternative to median income is mean income. Support for median income comes from concern that a few wealthy households could skew mean income. In addition, it is the median voter that is pivotal in a voting context. Support for mean income comes from the fact that it is tied to generally accepted welfare measures: mean willingness-to-pay and mean willingness-to-accept. Further, mean income is an indication of the total income in a water district, and may be a superior measure of how able a district is to subsidize its lowest income households.

2.2.2.2 Alternative Measures. If so, what alternative measures (for example, 10th or 25th income, poverty level income) should the Agency consider and why?

Within-district income inequalities (to the extent that the poor are not protected from cost increases) and between-district income inequalities raise arguments for consideration of lower income percentiles than median income. There are several approaches that could be taken. One option is to keep the current formula but specify a lower income percentile within water districts (for example, 10th or 25th percentile). This approach would increase the likelihood that an affordable compliance technology would not be found, and the entire class of communities in a category would be eligible to apply for variances.

A second option, designed to address the between-district income inequality issue, is to consider whether a certain percentage of districts (for example, 10% or 25%) fall below the threshold. This threshold could be set using median income or some lower income percentile as in the first option. If that percentage of communities falls below the threshold, then those communities that could show that they fall below the threshold would be eligible to apply for variances.

A third option would be to base the threshold on some measure of dispersion, such as variance or standard deviation, in addition to the median. For example, instead of median income level, an alternative would be to take the income level at 1, 1.5, or 2 standard deviations below the mean. If the baseline component is set in the same manner, then this approach would act similarly to the first option.

The Committee believes that dealing with between-district income inequalities is important, perhaps through something like option 2 or 3. While there is consensus on the Committee that income inequality argues for looking at income levels below the median, how far below the median is less clear. Perhaps the 25th percentile or 1.5 standard deviations below the mean is reasonable, but this is a value judgment for which we can offer no hard and fast guidance.

2.2.2.3 Effects of Alternatives. What would be the likely effect of such alternatives on existing and future national level affordable technology determinations?

The effect of a lower percentile, either within water districts or across water districts, would be to make it easier to reach the affordability threshold.

2.2.3 Charge Question 3. What alternatives should the Agency consider to 2.5% as the income percentage for the national level affordability threshold, and what would be the likely effect of such alternatives on existing and future national level affordable technology determinations? What basis should the Agency use to select from among such alternatives? Should the Agency use costs of other household goods and services or risk reduction activities as a basis for setting the affordability threshold as was done in the development of the current criteria?

While the answer to this question ultimately requires a judgment about fairness and equity, EPA might consider looking to public policy decision rules in the health sciences and/or transportation safety to determine whether their criteria are consistent with other policy decision-criteria. Given that the main benefit of a drinking water quality system is to reduce morbidity

and/or premature mortality, a comparison with health sciences and/or transportation safety seems appropriate. For example, in health economics, rules of thumb regarding whether a treatment is cost-effective are apparently routinely applied to assess treatment options (Garber and Phelps, 1997⁶). The cost-effectiveness threshold used in the health sciences could be compared with the cost effectiveness of spending 2.5% of the median income on drinking water system technology to see if comparable affordability criteria are being used. Similar comparisons might prove valuable from transportation safety policy and/or nutrition studies.

While such comparisons may be useful, they are unlikely to provide conclusive guidance. Thus, in addition to these comparisons, EPA might consider the fact that the national affordability threshold has never been exceeded; hence the "trigger" necessary for variances to be considered has never been activated. This fact, in conjunction with the evidence presented to the Committee suggesting that some small water systems have genuinely struggled with costs, suggests to us that the 2.5% rule is too high. This, in turn, suggests that a lower cutoff should be used, resulting in more likely triggering of the variance rule.

In this case, one would hope that superior state or local data and judgment will be used to allow variances on a case-by-case basis, resulting in the provision of a variance only when a clear and compelling case is established. The committee is concerned that local agencies may be under pressure to grant variances in many cases, whether the local situation calls for it or not. So, while it is desirable to allow low-income, small water districts faced with very expensive (per capita) system upgrade requirements to be granted variances when such upgrades would create real financial hardship, it is important that variances not be granted when the hardship is not severe. To help assure that this balance is preserved, we suggest that EPA consider a lower percentage than 2.5, but that this change be adopted *only* in conjunction with the development of clear and formal guidelines about when variances should be provided at the local level. The process of developing such guidelines and their implementation is not likely to be simple or without costs, but we believe it is imperative if the threshold value is to be changed.

2.2.4 Charge Question 4. Does the Committee believe the Agency should consider other approaches to calculating the national "expenditure baseline" than those used by the Agency heretofore?

A national-level determination tends to neglect the variation in costs or other economic circumstances that would be found if one looked individually at the different water utilities within a given size category. In effect, a national-level determination focuses attention on the central tendency of the cost distribution, and neglects its dispersion. Many of the equity issues that underlie the concept of affordability, however, are associated with the variation in costs.

Given the variation in costs, we believe it is important that the national-level determination of affordability serve only a screening function. The Committee encourages the Agency to develop guidelines for the case-by-case assessment of affordability in individual water supply systems that seek a variance. That said, our answer to the question is: there is no better approach to calculating the national expenditure baseline that we could recommend.

The Committee has concerns about the use of any expenditure baseline. Including an expenditure baseline in the formula implies that only the cumulative effect of drinking water regulations matters to the determination of affordability. This is inconsistent with making variances available for regulations that impose especially high costs on small systems. It has the

⁶Further work on this subject is by Pedram and Briggs (2001) who develop an affordability curve for a range of program budgets.

undesirable effect that early regulations are likely to be considered affordable, whereas later, after the affordability threshold has been exceeded, even regulations with trivial costs to small systems will not. An alternative would eliminate the expenditure baseline from the formula and evaluate the affordability of each set of regulations incrementally. Using such an incremental approach, however, would require a lower affordability threshold to offer sufficient protection to users of small systems.

2.2.5 Charge Question 5. Does the Committee believe that separate national level affordability criteria should be developed for ground water and surface water systems?

The argument for a separate affordability criterion for water systems utilizing ground water stems from the fact that a significant number of (typically) small rural communities have historically been able to draw upon groundwater as their source of supply with little or no treatment. The facilities of these water systems may consist of little more than a pump, elevated storage tank, and simple chlorination system to prevent contamination in the distribution system. Such a system may employ only a part-time, relatively narrowly skilled operator, and have a footprint no larger than the base of the tower of the tank. It is argued that for these communities to comply with drinking water quality regulations would entail incurring fixed costs of establishing a "whole treatment system" rather than simply adding on to an existing system.

In our judgment, the affordability criterion should be the same for groundwater and surface water systems. While it may be true that many groundwater sources require little treatment, some surface water supplies also require little treatment. There is great variation in treatment costs for both surface water and groundwater-based systems. Furthermore, historic expenditures are not relevant, for historically nearly all systems had minimal treatment. Cost and the ability of the community to pay are the issue, not the source of supply.

2.2.6 Charge Question 6. Should the Agency include an evaluation of the potential availability of financial assistance (for example Drinking Water State Revolving Fund) in its national level affordability criteria? If so, how could the potential availability of such financial assistance that reduces household burden be taken into consideration?

Funding is available to assist small systems through the Drinking Water State Revolving Fund and the Rural Utilities Service of the U.S. Department of Agriculture. These programs employ affordability as one, but not the exclusive criterion for awarding assistance. Whether these funds are adequate to assist all small systems that have difficulty meeting drinking water standards is unclear. There is also uncertainty regarding the ability of small systems to apply for these funds. Testimony from the National Rural Water Association indicates that "many small systems fail to take advantage of the opportunity because they are unaware and often not capable of doing the administrative work to secure the grant or loan."

If this funding is readily available to many or most systems facing affordability problems, it seems appropriate to take the availability of this funding into account in determining national level affordability. Under this scenario, the ability of systems to afford treatment is clearly affected by the availability of this funding, and the affordability assessment should take these sources into consideration. On the other hand, if funding is not commonly available to many systems, then the fact that it is available to some should not affect the determination. Systems should have the affordability determination made using the factors that influence them; if external funding sources are not likely to help them meet a new requirement, the affordability

determination should not take into account funding that will not reach most communities. EPA should strive to provide information to small systems to help them realize what options are available to them. This recommendation is not limited to small system affordability issues, rather, it should be applied more broadly to all drinking water issues.

2.2.7 Charge Question 7. Is there a need for making affordable technology determinations on a regional rather than a national basis? Does adequate readily available information exist to support such an approach? EPA is still exploring the degree of flexibility afforded by SDWA to make regional determinations, but would appreciate the Committee's advice on whether such determinations are feasible and warranted.

2.2.7.1 Regional vs National Determinations. Is there a need for making affordable technology determinations on a regional rather than a national basis?

The committee supports making determinations on a regional or even a local basis. It also supports adding an urban/rural distinction. Regional income measures and expenditure baselines would capture affordability relative to the resources available in a community more accurately than the current national values. However, a national affordability threshold is necessary to implement the fairness goal.

2.2.7.2 Available Information. Does adequate readily available information exist to support such an approach?

Income data are readily available for a more disaggregated analysis, but EPA derives the expenditure baseline from a survey whose sample may be too small for reliable regional values. Even if an expenditure baseline continues to be part of the formula and data do not support regional variation in this value, using regional income measures would still improve the current formula.

REFERENCES

- EPA Science Advisory Board (SAB). 1999. *An SAB Advisory on the National-Level Affordability Criteria and Technologies for Small Systems Under the 1996 Amendments to the Safe Drinking Water Act*. EPA-SAB-DWC-ADV-99-001, US EPA Science Advisory Board, Washington, DC, December, 1999.
- Garber, A. and Phelps, C. 1997. *Economic Foundations of Cost-Effectiveness Analysis*, *J. of Health Economics* 16: 1-31.
- Pedram, S. and A. Briggs. 2001. *Affordability and Cost-Effectiveness: Decision-Making on the Cost-Effectiveness Plane*, *Health Economics* 10: 675-680.

EXHIBIT II

CHAPTER 14 – FINANCIAL PROGRAM

This chapter documents the water and wastewater revenue requirements for the WRMP CIP. This evaluation will develop appropriate rate-based revenues based on sound fiscal policies, and identify an improved water and wastewater rate structure resulting in community-oriented customer bills.

14.1 Background

GWA provides potable water services to approximately 38,000 accounts, and wastewater services to 23,000 customers. The current water service revenues are based on consumption charges and fixed basic meter service fees. Consumption charges range from \$1.47 to \$4.42 per thousand gallons (Kgal), and the basic meter service fee starts at \$7.46 per month for the smallest ¾-inch water meter. Wastewater services charges are fixed at \$22 per month for all residential accounts; for all other customers the charges are a percentage of metered water use times a unit rate adjusted for estimated sewage strengths. The unit rate for non-residential wastewater charges ranges from \$2.30 to \$7.78 per Kgal of discharged sewage. Billing surcharges added to each bill are currently equal approximately nine percent. In fiscal year (FY) 2005-06, the rate-based revenues totaled \$49 million.

As detailed in the prior chapters, the GWA water infrastructure consists of production well sites and pump stations, storage tanks and reservoirs, transmission mains and distribution pipes, and services leading to water meters. The wastewater infrastructure includes sewer laterals, local collection systems, sewer interceptors and pump stations, and a series of wastewater treatment plants. Over the next five years, through fiscal year (FY) 2010-11 on September 30, 2011, the WRMP has identified approximately \$185 million in current 2007 year dollar funding requirements for water and wastewater utility infrastructure improvements. This and future capital project funding will require a significant increase in customer service billing. GWA is currently operating under a Stipulated Order, which includes specific financial goals and policies and the funding of projects required for life and safety and improvement of service levels. However, the Stipulated Order does not specify the rate-based revenue requirement for compliance. These financial requirements are identified in this chapter.

14.2 Financial Objectives and Rate Setting Process

The main funding source for municipal utilities is customer rate-based revenues. The rates are based on the concept that each customer receives a benefit from water and wastewater services, and should pay for that benefit. Rate-setting criteria applicable to these utilities are as follows:

- **Sufficient Revenue** – Charges should generate the revenues necessary to recover the O&M expenses and capital costs of the system consistent with sound fiscal policies, for a service which must last in perpetuity.
- **Equitable** – The charge structure should apportion the costs of providing services among different customers (i.e., residential, commercial, hotel, federal and irrigation) such that each customer class is paying fees commensurate with the services they receive.
- **Implementable** – Data upon which the rates are based is reasonably available for billing purposes, and the rate structure is feasible to administer.
- **Practical** – Proposed rates are easy to understand and the customer bills are publicly acceptable and supported by the elected officials governing the utility.

14.7 Cost of Service Analysis

This section addresses cost of service (COS) principles and sets the stage for an alternative rate structure that can result in a higher level of equity and fairness in charges. The results of this COS analysis, if not used to change the existing rate structure, have no effect on customer billing levels. Rate equity may enhance the willingness of certain customers to pay for services they believe to be fair. However, reaching that equity may result in rate shock from the increasing bills required of certain classes, and specifically the residential customers.

In a COS analysis, water and sewer costs are segregated in order to more accurately identify the costs associated with each utility service. These costs of service are allocated to each customer class, based on the utility demands by that class. Finally, the costs are compared to the bills charged to the respective customer classes, and the differences tabulated. Note that there are many residential water customers with no sewer service, and several sewer customers not using GWA water.

Two COS methods are commonly used to allocate water and sewer system costs: the base-extra capacity method and the commodity-demand method. The two differ primarily in the treatment of peaking costs. Both of these methods are endorsed by AWWA and WEF. In this study, the costs are allocated using the water-related base-extra capacity method and the wastewater-related functional cost method. The allocations used in these methods represent system operational objectives to be achieved within the planning period. Independent of the method selected, costs (and revenue requirements) are allocated to the functional cost categories for water services: customer account service, meter capacity-related service, average annual water usage, and peak water consumption. For wastewater services the functional cost categories are for customer account service, estimated sewage discharges (based on water usage and a return to sewer factor), and sewage strength.

The embedded COS method is used to analyze the costs of serving the customers by allocating the revenue requirements to applicable functional cost categories, dividing these costs by the unit demands in each category, and determining the unit costs of service. This method is based on the premise that a water system is designed to serve a variety of demands placed on it by the different users connected to the system. Thus, it allocates costs in proportion to the demands that users make on the system.

The division of GWA costs between water and sewer elements is the first step of the COS analysis. Table 14-11, Utility Expense Functional Allocations, divides the O&M costs between water and sewer accounts. The divisions of costs are itemized among the four primary expenditures of personnel services, water and power costs, other O&M costs, and depreciation of infrastructure costs. Note that for COS evaluations, depreciation costs replace actual annual costs of project expenditures (including debt service), as they represent the long-term average cost of the fixed assets. For this analysis, to better reflect the projected COS over the multi-year master plan, depreciation is based on the depreciated replacement cost of the existing assets instead of book value. As noted, 64% of the FY 2005-06 GWA budget is allocated to the water utility, with the remainder going to the wastewater system.

Table 14-43 – Typical Bills with Cost of Service-based Rates (Alternative 3)

Description	FY 2006-07 with Midyear Adjustment				FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11
	FY 2004-05	FY 2005-06						
Projected Typical Res Water Use (Kgal/month)	8	8	9	9	9	9	9	
Water Rate Increase			Varies	8%	8%	8%	8%	
Wastewater Rate Increase			Varies	8%	8%	8%	8%	
Consolidated Typical Monthly Residential Bill								
Water Service (Cust. & Meter, 3/4 inch)	\$7.46	\$30.32	\$32.74	\$35.36	\$38.19	\$41.24		
Basic Water Usage Rates	\$12.00	\$23.42	\$25.29	\$27.31	\$29.50	\$31.86		
Water Usage (over 5 Kgal/month)	\$10.65	na	na	na	na	na		
Wastewater Customer Charges	\$22.00	\$20.81	\$22.48	\$24.28	\$26.22	\$28.32		
Wastewater Variable Charges	na	\$15.56	\$16.81	\$18.15	\$19.60	\$21.17		
Public Utilities Surcharge 2001	\$1.72	na	na	na	na	na		
Supplemental Annuity Retirement (SAR)	\$0.75	na	na	na	na	na		
Total Monthly Bill	\$55	\$90	\$97	\$105	\$114	\$123		
Bill Increase (including increased water metering)		65%	8%	8%	8%	8%		
Average Annual Bill Increase Over Five Years (including increased water metering)								18%
Summary Bills of Key Customers								
Residential	\$55	\$90	\$97	\$105	\$114	\$123		
Golf Course		\$835	\$894	\$965	\$1,042	\$1,126		
Commercial C Accounts		\$223	\$239	\$258	\$279	\$301		
Typical Hotels		\$8,784	\$9,387	\$10,138	\$10,949	\$11,825		
Large Hotels		\$46,011	\$49,161	\$53,094	\$57,342	\$61,929		

Lifeline rates are not part of cost of service rates due to subsidies between classes.

A billing increase in excess of even 15% is likely to cause rate shock among certain residential customers. Regardless of essential project needs, any rate recommendations with severe hikes in bills should be accompanied by lifeline rates for financially vulnerable customers. While fair and equitable, the COS rates may not be viable for implementation due to the severe rate shock that a 65% increase will cause.

In order to mitigate the 65% billing increase in FY 2006-07, while still implementing cost of service charges, a phase-in of COS-based changes was evaluated. The results of the phase-in were unsatisfactory, as the billing increase for residential customers still remained excessively high at 48%. These calculations are tabulated in Volume 1 Appendix 1M - Financial Program to this chapter.

14.10 Utility Service Affordability

Table 14-44 evaluates the affordability of the projected bills, using a projected range of household incomes from the 2000 Census against the proposed residential bill. A number of governmental studies opine that an appropriate marker for utility affordability in typical western communities is that the water and sewer utility costs should be two percent or less than the median household income. While it could be argued that the Guam community is atypical, with a larger number of households on subsistence income, it is reasonable to believe that utility charges below two percent

of median household income are reasonable and that most residents can tolerate charges of three to four percent of income.

Table 14-44 – Affordability for Households with Alternative 2 Updated Lifeline Rates

Annual Household Income (HH I/C per 2000 Census (a))	Avg. HH I/C in 2005 (est)	No. of Households (b)	Affordable Bill at 2% of HH I/C (\$/month)(c)	FY 05-06 Current Typ. Bill (\$/month)		
				FY 2005-06 Current Typ. Bill (\$/month)	Cumulative Percentage	FY 2005-06 Cur. Bill as % of Income
No Income	\$0	2,074				
Less than \$10,000	\$8,000	3,502	\$13	\$55	10%	8.2%
\$10,000 to \$15,000	\$14,000	2,183	\$23	\$55	16%	4.7%
\$15,000 to \$20,000	\$19,000	2,183	\$32	\$55	21%	3.4%
\$20,000 to \$25,000	\$24,000	2,483	\$40	\$55	28%	2.7%
\$25,000 to \$30,000	\$29,000	2,483	\$48	\$55	35%	2.3%
\$30,000 to \$35,000	\$35,000	2,379	\$58	\$55	41%	1.9%
\$35,000 to \$40,000	\$40,000	2,179	\$67	\$55	47%	1.6%
\$40,000 to \$45,000	\$44,000	2,199	\$73	\$55	53%	1.5%
\$45,000 to \$50,000	\$48,000	1,999	\$80	\$55	59%	1.4%
\$50,000 to \$60,000	\$55,000	3,370	\$92	\$55	68%	1.2%
\$60,000 to \$70,000 (est)	\$63,000	5,000	\$105	\$55	82%	1.0%
\$70,000 to \$80,000 (est)	\$73,000	3,000	\$122	\$55	90%	0.9%
\$80,000 to \$90,000 (est)	\$83,000	1,000	\$138	\$55	93%	0.8%
More than \$90,000 (est)	\$93,000	621	\$155	\$55	94%	0.7%
Total		36,652				
Median (2000 Census)		\$39,317				
Median (2005 estimate)		\$40,295		Bill as % of Typical Bill \$55	HH I/C 1.6%	

Fiscal Year	Increases in Annual Income	Future Median Household Income	Alt. 2 Lifeline Bill	Typical Alt. 2 Regular Bill	Households Paying less than 2% (c)	Typical Bill as % of Median Income
FY 2005-06		\$40,295	\$55	\$55	65%	1.6%
FY 2006-07	2.5%	\$41,300	\$53	\$62	59%	1.8%
FY 2007-08	2.5%	\$42,300	\$55	\$67	59%	1.9%
FY 2008-09	2.5%	\$43,400	\$56	\$73	53%	2.0%
FY 2009-10	2.5%	\$44,500	\$58	\$78	53%	2.1%
FY 2010-11	2.5%	\$45,600	\$59	\$85	47%	2.2%
FY 2011-12	2.5%	\$46,700	\$60	\$91	47%	2.3%
FY 2012-13	1.5%	\$47,400	\$61	\$104	41%	2.6%
FY 2013-14	1.5%	\$48,100	\$62	\$119	32%	3.0%
FY 2014-15	1.5%	\$48,800	\$63	\$125	32%	3.1%
FY 2015-16	1.5%	\$49,500	\$64	\$130	18%	3.2%
FY 2016-17	1.5%	\$50,200	\$64	\$135	18%	3.2%
FY 2017-18	1.5%	\$51,000	\$65	\$140	18%	3.3%
FY 2018-19	1.5%	\$51,800	\$66	\$144	18%	3.3%
FY 2019-20	1.5%	\$52,600	\$67	\$149	18%	3.4%
FY 2020-21	1.5%	\$53,400	\$68	\$154	18%	3.5%
FY 2021-22	1.5%	\$54,200	\$69	\$159	18%	3.5%
FY 2022-23	1.5%	\$55,000	\$70	\$165	18%	3.6%
FY 2023-24	1.5%	\$55,800	\$72	\$170	10%	3.7%
FY 2024-25	1.5%	\$56,600	\$73	\$174	10%	3.7%

a. The 2000 Census did not segregate annual household income above \$60,000; the allocations above \$60,000 are estimates.

b. Economic information is from the 2000 Census.

c. The assumed affordable bill is less than or equal to two percent of the median

As shown in Table 14-44, current combined utility bills are 1.6 percent of the median income. However, as shown in the table, more than 21% of residential customers have charges greater than three percent of their household income. It has been previously estimated that the proposed lifeline program will support 15% of the household customers.

It is reasonable to accept that if the median household pays two percent of their income on utilities, then 50% of the households will pay more, and 50% less. Table 14-44 indicates that currently a full 65% of households pay less than two percent.

Unfortunately, by 2010 the median household will have gone from paying 1.6 percent to more than two percent of income on water and sewer utilities, and by 2014 the percentage of median income will rise to three percent. Fortunately, over the 20-year projection, the cost of utilities never rises over 3.7 percent of the median household income. In conclusion, it appears that the 20-year financial plan is affordable, but with three caveats.

First, the Guam community has a disproportionately high level of low-income households, so a vigorous lifeline program is essential if those customers are to continue receiving utility services unabated.

Second, it may be difficult for elected utility managers to enact continuous rate increases of over five percent annually. While a public outreach information campaign will create some support for rate increases, either the Base Case CIP or the Minimum Pace CIP funding will be challenging to implement if approval by elected officials is required. The needs and benefits of the improvements will need to be clearly communicated to GWA's customers to gain support.

Third, it is likely that under Guam community practices the current inequitable billing structure can remain in effect. While it has been shown in the cost of service analysis that the current rates impose a higher-than-equitable financial burden on hotels, the effect of this burden is to lower the bills to residents by "exporting" some of the utility costs offshore through the tourist industry.

14.11 Survey of Projected Bills under Rate Alternatives

To demonstrate the billing effects of all alternatives on a mix of customers, Table 14-45 develops the estimated typical water demands for the most common customer classes of residential, Commercial C class, hotels large and typical, and golf courses. Tables 14-46 through 14-50 tabulate the current and projected bills for both utility services for all rate alternatives. Figures 14-9 through 14-14 illustrate the results in bar chart format.

Table 14-45 - Typical Water Demands of Customer Classes

Class	Avg. Demand (Kgal/month) FY 2004-05	Est. Typical to Avg Demand Ratio	Typical FY 2004-05		Number of Accounts
			Water Use (Kgal/month)	Meter Size	
Golf Course	167	70%	117	3"	14
Commercial C	30	70%	21	1"	2,144
Hotel (H)	1,346	70%	942	2"	56
Residential	10	82%	8	3/4"	34,171

Figure 14-9 – Projected Residential Water and Sewer Bills

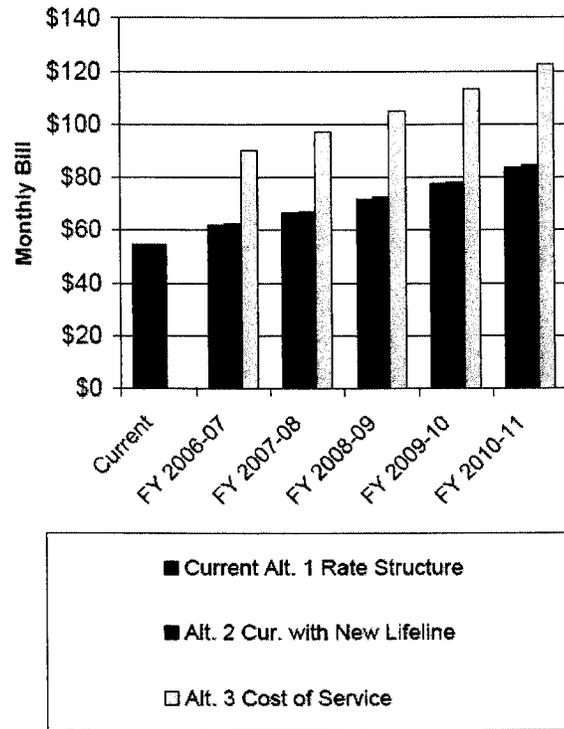


Figure 14-10 – Projected Lifeline Bills

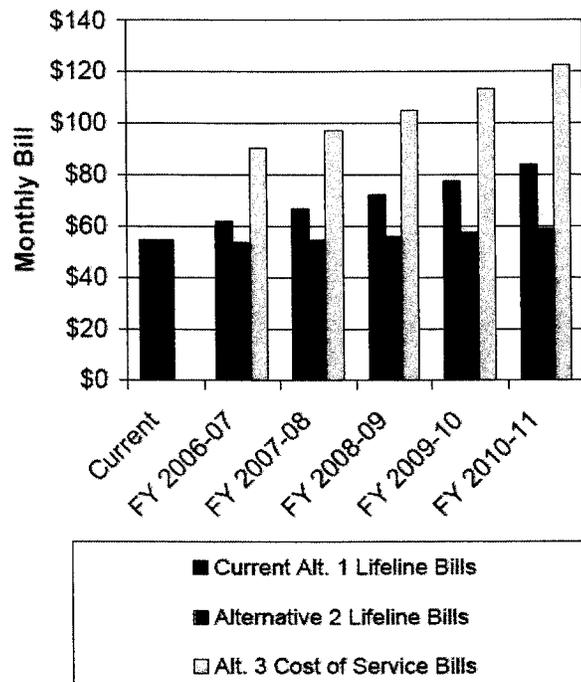


EXHIBIT JJ

Affordability for Households

FY 2010					
Household Income 2005 (1)	Avg. HH I/C in 2005	No. of Households (1)	Affordable Bill at 2% of HH I/C (\$/month)	Current Typical Bill (\$/month) (2)	Bill as % of Median Income
No Income	\$0	1,089			
Less than \$9,000	\$7,000	1,913	\$12	\$68	11.69%
\$9,000 to \$10,999	\$9,000	1,261	\$15	\$68	9.09%
\$11,000 to \$12,999	\$11,000	917	\$18	\$68	7.44%
\$13,000 to \$14,999	\$13,000	1,261	\$22	\$68	6.30%
\$15,000 to \$19,999	\$17,000	2,350	\$28	\$68	4.81%
\$20,000 to \$29,999	\$28,000	5,274	\$47	\$68	2.92%
\$30,000 to \$39,999	\$35,000	5,331	\$58	\$68	2.34%
\$40,000 to \$49,999	47062 (1)	4,471	\$78	\$68	1.74%
\$50,000 to \$59,999	\$58,000	3,497	\$97	\$68	1.41%
\$60,000 to \$69,999	\$65,000	3,038	\$108	\$68	1.26%
\$70,000 to \$79,999	\$75,000	2,178	\$125	\$68	1.09%
\$80,000 to \$89,999	\$85,000	1,834	\$142	\$68	0.96%
\$90,000 to \$99,999	\$95,000	1,720	\$158	\$68	0.86%
\$100,000 and above	\$103,000	4,127	\$172	\$68	0.79%
Total		40,261			

Fiscal Year	Increases in Annual Median HH Income (4)	Future Median Household Income	Affordable Bill at 2% of HH I/C (\$/month)	Typical Bill (5)	Typical Bill as % of Median Income
FY2010	1.0%	\$48,474	\$81	\$68	1.7%
FY 2011	1.0%	\$49,000	\$82	\$70	1.7%
FY 2012	1.0%	\$49,500	\$83	\$72	1.7%
FY 2013	1.0%	\$50,000	\$83	\$75	1.8%
FY 2014	1.0%	\$50,500	\$84	\$74	1.8%
FY 2015	1.0%	\$51,000	\$85	\$74	1.7%
FY 2016	1.0%	\$51,500	\$86	\$84	1.9%
FY 2017	1.0%	\$52,000	\$87	\$84	1.9%
FY 2018	1.0%	\$52,500	\$88	\$106	2.4%
FY 2019	1.0%	\$53,000	\$88	\$106	2.4%
FY 2020	1.0%	\$53,500	\$89	\$106	2.4%
FY 2021	1.0%	\$54,000	\$90	\$106	2.3%
FY 2022	1.0%	\$54,500	\$91	\$106	2.3%
FY 2023	1.0%	\$55,000	\$92	\$106	2.3%
FY 2024	1.0%	\$55,600	\$93	\$106	2.3%
FY 2025	1.0%	\$56,200	\$94	\$106	2.3%
FY 2026	1.0%	\$56,800	\$95	\$106	2.2%
FY 2027	1.0%	\$57,400	\$96	\$106	2.2%
FY 2028	1.0%	\$58,000	\$97	\$106	2.2%
FY 2029	1.0%	\$58,600	\$98	\$106	2.2%
FY 2030	1.0%	\$59,200	\$99	\$106	2.1%

(1). Source: Household and Per Capita Income: 2005, January 12, 2007, Guam Dept. of Labor, Bureau of Statistics (released January 12, 2007)

(2) The average household income in 2005 was not published in the January 12, 2007 report. The amount is an assumption of GWA.

(3) Typical residential bill in FY2010 based on 10Kgal monthly consumption

(4) GWA assumption of annual increase of median Household income subsequent to January 12, 2007 Dept. of Labor report

(5) Typical residential bill based on 10kgal monthly consumption and prevailing GWA residential tariff

Residential Bills Under Approved 5 yr Rate Plan and Projected Future Rates
 Purpose: To document calculation of a typical residential bill

Description	Current FY 2010	Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015	Projected FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026	Projected FY 2027	Projected FY 2028	Projected FY 2029	Projected FY 2030	Total
Approved annual rate adjustment																						
Fixed and Volumetric	14%	8%	4.9%	8%	2%	0%	23%	0%	41%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	101%
Lifeline	0%	0%	0%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%
Projected Typical Residential Water Use (Kgal/month)																						
Typical Monthly Residential Charge	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Water Meter & Cust Services (3/4 inch)	\$10.56	\$11.41	\$11.98	\$12.92	\$12.92	\$12.92	\$15.83	\$15.83	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32
Block 1 Usage	\$2.74	\$2.74	\$2.74	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95
Block 2 Usage	\$25.15	\$27.15	\$28.50	\$30.80	\$30.80	\$30.80	\$37.73	\$37.73	\$53.20	\$53.20	\$53.20	\$53.20	\$53.20	\$53.20	\$53.20	\$53.20	\$53.20	\$53.20	\$53.20	\$53.20	\$53.20	\$53.20
Wastewater Account Charges	\$25.08	\$25.08	\$25.08	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09
Wastewater Volume Discharge Charges	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Surcharges	\$4.87	\$3.18	\$3.33	\$1.53	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$68.20	\$69.56	\$71.61	\$75.29	\$73.76	\$73.76	\$83.60	\$83.60	\$105.56	\$105.56												
Summary of Charges																						
Water Services	\$38.45	\$41.30	\$43.20	\$46.67	\$46.67	\$46.67	\$56.51	\$56.51	\$78.47	\$78.47	\$78.47	\$78.47	\$78.47	\$78.47	\$78.47	\$78.47	\$78.47	\$78.47	\$78.47	\$78.47	\$78.47	\$78.47
Sewer Services	\$25.08	\$25.08	\$25.08	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09
Surcharges	\$4.67	\$3.18	\$3.33	\$1.53	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Typical Bill on then current rates	\$68.20	\$69.56	\$71.61	\$75.29	\$73.76	\$73.76	\$83.60	\$83.60	\$105.56	\$105.56												
Residential Rates Per kgal																						
Water Meter & Cust Services (3/4 inch)	\$10.56	\$11.41	\$11.98	\$12.92	\$12.92	\$12.92	\$15.83	\$15.83	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32	\$22.32
Block 1 Usage	\$2.74	\$2.74	\$2.74	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95
Block 2 Usage	\$5.03	\$5.43	\$5.70	\$6.16	\$6.16	\$6.16	\$7.55	\$7.55	\$10.64	\$10.64	\$10.64	\$10.64	\$10.64	\$10.64	\$10.64	\$10.64	\$10.64	\$10.64	\$10.64	\$10.64	\$10.64	\$10.64
Wastewater Account Charges	\$25.08	\$25.08	\$25.08	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09	\$27.09
Wastewater Volume Discharge Charges	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Surcharges	3.48%	3.48%	3.48%	3.48%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Legislative PUC	9.60%	4.75%	4.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Cash Flow Summary

(000 omitted)

Purpose: to document revenue requirements and requisite rates

	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	FY2030
Annual Rate Adjustment - Volumetric and Fixed																					
LifeLine	14.00%	8.00%	4.90%	8.00%	2.40%	0.00%	22.50%	0.00%	41.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Operating Revenues	\$86,668	\$69,820	\$75,336	\$81,405	\$85,026	\$86,726	\$108,365	\$110,532	\$158,967	\$162,146	\$185,389	\$168,687	\$172,071	\$175,512	\$179,023	\$182,603	\$186,255	\$189,880	\$193,780	\$197,655	\$201,609
Less: Surcharges	\$6,130	\$4,250	\$4,637	\$2,206	\$2,250	\$2,295	\$2,341	\$2,388	\$2,436	\$2,484	\$2,534	\$2,585	\$2,636	\$2,689	\$2,743	\$2,798	\$2,854	\$2,911	\$2,969	\$3,028	\$3,089
Cash Available	\$80,538	\$65,570	\$70,699	\$79,199	\$82,776	\$84,431	\$106,024	\$108,144	\$156,531	\$159,662	\$182,855	\$166,112	\$169,435	\$172,823	\$176,280	\$179,805	\$183,402	\$187,070	\$190,811	\$194,627	\$198,520
O&M																					
Less: Depreciation	58,422	60,325	63,204	66,159	68,805	71,558	74,420	77,397	80,493	83,712	87,061	90,543	94,165	97,931	101,849	105,923	110,160	114,566	119,149	123,915	128,871
Net O&M	13,253	14,253	15,253	16,253	17,253	18,253	19,253	20,253	21,253	22,253	23,253	24,253	25,253	26,253	27,253	28,253	29,253	30,253	31,253	32,253	33,253
Cash available for Debt service	45,169	46,072	47,951	49,906	51,552	53,305	55,167	57,144	59,240	61,459	63,808	66,290	68,912	71,678	74,596	77,670	80,907	84,313	87,886	91,662	95,618
Debt Service - ST Debt	15,369	19,498	22,748	29,293	31,223	31,127	50,857	51,000	97,292	98,203	99,048	99,822	100,523	101,145	101,684	102,136	102,495	102,757	102,915	102,966	102,902
Debt Service - Bonds	3,604	3,604	3,604	3,604	3,604	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Cash	7,704	7,706	7,708	7,704	17,831	17,831	29,032	29,032	55,680	55,680	55,680	55,680	55,680	55,680	55,680	55,680	55,680	55,680	55,680	55,680	55,680
Debt Service Coverage - Bonds	2.00	2.53	2.95	3.80	1.75	1.75	1.75	1.76	1.75	1.76	1.78	1.79	1.81	1.82	1.83	1.83	1.84	1.85	1.85	1.85	1.85

Assumptions

1. Annual percentage growth in sales and demand 2%
2. Annual Inflation & increased demand for O&M 4%
3. Net Cash will be utilize to supplement CIP funding requirements
4. Revenue requirements are established to be sufficient for maintaining minimum debt reserve requirement set by the PUC and GWA 2005 Revenue bond 1.75%
5. Minimum debt service coverage ratio set by the PUC
6. GWA/received PUC approval for rate adjustments in Fiscal years 2010 thru 2013 subject to annual reviews

NEWS



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HOUSEHOLD AND PER CAPITA INCOME: 2005 **(MONEY INCOME OF CIVILIAN HOUSEHOLDS ON GUAM)**

Guam's average (mean) household income for calendar year 2005 was \$47,062, an increase of \$5,866 or 14.2 percent from calendar year 2003, which was \$41,196. Table 1 also shows a moderate increase of the household size compared to 2003 and a moderate increase in the number of earners within the household.

Per Capita Income for 2005 is \$12,768, an increase of \$1,244 or 10.8 percent from calendar year 2003. Per Capita Income statistics include the total non-institutional civilian population even those without income. Whereas, the mean (average) earners incomes are only those that are 16 years of age and over, excluding those who have no income. The Mean (average) Earner's Income for 2005 was \$22,625, which is \$847, or 3.9 percent above calendar year 2003.

The statistics are based on data collected from the Current Labor Force Statistics survey in March of each year referring to the previous year's income.

The income statistics may not be comparable with other income statistics due to differences in the income definition concepts used and the scope of persons and households included.

TECHNICAL NOTES

DEFINITIONS AND EXPLANATIONS

POPULATION COVERAGE: The population covered in this report includes the civilian non-institutional population on Guam including U.S. Citizens and immigrant (resident) aliens as well as citizens of the Marshall Islands and the Federated States of Micronesia who are authorized by the Compact of Free Association to accept employment in the United States. Also included are the citizens of the Republic of Palau which are authorized to accept employment through the Covenant with the U.S. in October 1994. Excluded are members of the U.S. Armed Forces and their dependents living on posts, nonimmigrant (non-resident) aliens and inmates of institutions. For military families living outside the military reservations, income recorded per household or family refers only to the incomes of the dependents for that household or family. Furthermore, it is important to note that the estimates for total income per household or family takes into consideration the aggregate sum of money income for all members of the household or family member 16 years of age and over. No information regarding income, therefore, for persons under 16 years of age are considered in the reporting of money income.

HOUSEHOLD: A household consists of all the persons who occupy a house, an apartment, or other groups of rooms, or a room which constitutes a housing unit. A group of rooms or a single room is regarded as a housing unit when it is occupied as a separate living quarters; that is, when the occupants do not live and eat with any other unit in the structure, and when there is either (1) direct access from the outside or through a common hall, or (2) a kitchen or cooking equipment for the exclusive use of the occupants.

INCOME: Money income is defined as the algebraic sum of money wages and salaries, net income from self-employment, pensions, dividends, interest, and other money income received. Money income of households or families, as used in this report, refers to consumer money income for the calendar year before deduction of income taxes or social security taxes. Non-monetary items of income are not covered. None of the aggregated income concepts (gross national product, national income, personal income) is exactly comparable with consumer money income. The nearest approximation to consumer money income is "personal income." Personal Income is the current income received by persons from all sources of net contributions for social insurance. Not only individuals (including owners of unincorporated enterprises), but nonprofit institutions, private trust funds and private health and welfare funds are classed as "persons." Personal income includes transfers (payments not resulting from current productions) from government and businesses, such as social security benefits, military pensions, etc, but excludes transfers among persons. Although most of the income is in monetary form, there are important non-monetary inclusions – chiefly, estimated net rental value to owner-occupants of their home, the value of services furnished without payment by financial intermediaries, and the value of food consumed on farms.

TABLE 1. NUMERICAL AND PERCENTAGE DISTRIBUTION BY HOUSEHOLD INCOME ON GUAM 2005

HOUSEHOLD INCOME YEAR	2003		2005	
	NUMBER	%	NUMBER	%
TOTAL	39,008	100	40,298	100.0
NO INCOME	2,319	5.9	1,089	2.7
UNDER \$3,000	860	2.2	537	1.4
\$ 3,000 - 4,999	748	1.9	459	1.1
\$ 5,000 - 6,999	785	2	344	0.9
\$ 7,000 - 8,999	748	1.9	573	1.4
\$ 9,000 - 10,999	1,159	3	1,261	3.1
\$ 11,000 - 12,999	1,309	3.4	917	2.3
\$ 13,000 - 14,999	673	1.7	1,261	3.1
\$ 15,000 - 19,999	3,029	7.8	2,350	5.8
\$ 20,000 - 29,999	6,283	16.1	5,274	13.1
\$ 30,000 - 39,999	4,600	11.8	5,331	13.2
\$ 40,000 - 49,999	3,927	10.1	4,471	11.1
\$ 50,000 - 59,999	3,590	9.2	3,497	8.7
\$ 60,000 - 69,999	2,431	6.2	3,038	7.5
\$ 70,000 - 79,999	2,319	5.9	2,178	5.4
\$ 80,000 - 89,999	1,272	3.3	1,834	4.6
\$ 90,000 - 99,999	486	1.2	1,720	4.3
\$100,000 & ABOVE	2,468	6.3	4,127	10.2

	2003	2005
MEDIAN HOUSEHOLD INCOME	\$33,457	\$40,373
MEAN HOUSEHOLD INCOME	\$41,196	\$47,062
AVERAGE HOUSEHOLD SIZE	3.66	3.9
AVERAGE EARNERS / HOUSEHOLD	1.58	2.2

TABLE 2. PER CAPITA MONEY INCOME

GUAM 2005					
INCOME CATEGORY	NUMBER	%	INCOME CATEGORY	NUMBER	%
TOTAL	104,785				
NO INCOME	16,050	15.3	28,000 - 28,999	1,318	1.3
UNDER \$1,000	2,809	2.7	29,000 - 29,999	401	0.4
\$ 1,000 - 1,999	860	0.8	30,000 - 30,999	2,637	2.5
\$ 2,000 - 2,999	860	0.8	31,000 - 31,999	745	0.7
\$ 3,000 - 3,999	2,923	2.8	32,000 - 32,999	860	0.8
\$ 4,000 - 4,999	1,662	1.6	33,000 - 33,999	1,433	1.4
\$ 5,000 - 5,999	2,408	2.3	34,000 - 34,999	459	0.4
\$ 6,000 - 6,999	1,662	1.6	35,000 - 35,999	2,694	2.6
\$ 7,000 - 7,999	1,146	1.1	36,000 - 36,999	1,490	1.4
\$ 8,000 - 8,999	2,522	2.4	37,000 - 37,999	1,089	1
\$ 9,000 - 9,999	1,662	1.6	38,000 - 38,999	631	0.6
\$10,000 - 10,999	5,216	5	39,000 - 39,999	573	0.5
\$11,000 - 11,999	2,293	2.2	40,000 - 40,999	2,293	2.2
\$12,000 - 12,999	4,299	4.1	41,000 - 41,999	229	0.2
\$13,000 - 13,999	2,580	2.5	42,000 - 42,999	401	0.4
\$14,000 - 14,999	2,809	2.7	43,000 - 43,999	401	0.4
\$15,000 - 15,999	4,242	4	44,000 - 44,999	0	0
\$16,000 - 16,999	2,236	2.1	45,000 - 45,999	573	0.5
\$17,000 - 17,999	1,490	1.4	46,000 - 46,999	344	0.3
\$18,000 - 18,999	2,408	2.3	47,000 - 47,999	172	0.2
\$19,000 - 19,999	860	0.8	48,000 - 48,999	516	0.5
\$20,000 - 20,999	2,809	2.7	49,000 - 49,999	459	0.4
\$21,000 - 21,999	1,548	1.5	50,000 - 59,999	2,350	2.2
\$22,000 - 22,999	1,548	1.5	60,000 - 69,999	2,178	2.1
\$23,000 - 23,999	1,376	1.3	70,000 - 79,999	401	0.4
\$24,000 - 24,999	4,758	4.5	80,000 - 89,999	229	0.2
\$25,000 - 25,999	2,465	2.4	90,000 - 99,999	229	0.2
\$26,000 - 26,999	688	0.7	100,000 & ABOVE	803	0.8
\$27,000 - 27,999	688	0.7			

	2004	2005
PER CAPITA INCOME	\$11,254	\$12,768
MEDIAN INDIVIDUAL INCOME	\$12,338	\$15,011
MEAN EARNER'S INCOME	\$21,778	\$22,625