

The Philippine Water Revolving Fund Support Program

Water Supply Project Appraisal Guidebook

for Investors and Decision Makers



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This guidebook was published with assistance from the USAID Philippine Water Revolving Fund (PWRF) Support Program. The views expressed here do not necessarily reflect those of the USAID or the United States Government.

The PWRF Support Program is a collaborative undertaking of GOP Partners, USAID, Japan International Cooperation Agency (JICA), LGU Guarantee Corporation (LGUGC), and private financing institutions (PFIs) through the Bankers Association of the Philippines. The Program's GOP partners are led by the Department of Finance and include the Development Bank of the Philippines and the Municipal Development Fund Office.

The PWRF Support Program aims to establish a co-financing facility that combines ODA/JICA resources with PFI funds for creditworthy water service providers, using a financial structure designed to allow affordable loan terms without sacrificing the viability of PFIs. PFIs have access to credit risk guarantees provided by LGUGC and USAID's Development Credit Authority.

The PWRF Support Program operates around three main objectives, which are to:

- Establish the co-financing facility and develop a long-term financing strategy and mechanism with broader private sector participation;
- Strengthen water project financing and enable other conditions necessary for optimizing the PWRF Support Program's positive impact on the sector, including corollary regulatory reforms; and
- Assist water districts and local government units in developing a pipeline of bankable water projects.

The PWRF Support Program is implemented by Development Alternatives, Inc. in association with The Community Group International LLC, Resource Mobilization Advisors, and CEST, Inc.

Contributors

- Chapter 1** **An overview of the Philippine water supply sector**
Alma Porciuncula, Chief of Party, Philippines Water Revolving Fund Support Program
- Chapter 2** **Regulation of water service providers**
Ramon Alikpala, Executive Director, National Water Resources Board
Mario Quitoriano, Department Manager, Local Water Utilities Association (LWUA)
Noemi Tan, Acting Division Manager, LWUA
- Chapter 3** **Water services financing**
Rodolfo Pantillano, Water and Sanitation Finance Specialist, PWRF SP
- Chapter 4** **Project and feasibility study preparation**
Antonio de Vera, Water Utility Development Specialist, PWRF SP
Del McCluskey, Technical Area Manager, Development Alternatives, Inc.
Ferdinand Asuncion, Senior Project Specialist, PWRF SP
Mario Quitoriano, Department Manager, LWUA
- Chapter 5** **Elements of water system development**
Ephraim Jacildo, LWUA
Armando Paredes, General Manager, Metro Cebu Water District
Arnold Alvarez, Hydrogeologist, PWRF SP
Jose Marie Lim, Water Treatment Specialist, PWRF SP
- Chapter 6** **Project appraisal**
Aileen Castro, Assistant Vice President, LGU Guarantee Corporation
Rodolfo Pantillano, Water and Sanitation Finance Specialist, PWRF SP
Antonio De Vera, Water Utility Development Specialist, PWRF SP
- Chapter 7** **Loan application and approval**
Adoracion Navarro, Economic Policy Specialist, PWRF SP
- Chapter 8** **Loan implementation**
Ferdinand Asuncion, Senior Project Specialist, PWRF SP
Doreen Carla Erfe, Senior Policy and Institutional Development Specialist, PWRF SP
- Technical Editor
Del McCluskey, Development Alternatives, Inc.

Technical reviewers

Madeline Aldana, Senior Assistant Vice President, Development Bank of the Philippines
Fe Banluta, Program Manager, Department of the Interior and Local Government
Nanette Biason, Senior Manager, Bank of the Philippine Islands
Alberto Bienvenida, Senior Vice President, Allied Banking Corporation
Justino Bote, Assistant Vice President, DBP
Liduvino Geron, First Vice President, Land Bank of the Philippines
Ephraim Jacildo, Division Manager, Project Planning Division Area 5, LWUA
Lydia Oriol, President, LGU Guarantee Corporation
Mario Quitoriano, Department Manager, LWUA
Mario Villasas, General Manager, Cabanatuan City Water District

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and many others who in various ways made this publication possible.

Last but not least, we thank USAID not only for their support in this undertaking but also for their staunch advocacy of public-private partnerships.

Abbreviations

BAC	Bids and Awards Committee
BLGF	Bureau of Local Government Finance
BSP	Bangko Sentral ng Pilipinas
BWSA	Barangay Water Supply Association
CBO	Community-based organization
CCC	Conditional Certificate of Conformance
CPC	Certificate of Public Convenience
CPCN	Certificate of Public Convenience and Necessity
DA	Deed of assignment
DBP	Development Bank of the Philippines
DED	Detailed engineering design
DOF	Department of Finance
DOF-BLGF	Department of Finance - Bureau of Local Government Finance
DOH	Department of Health
DSCR	Debt coverage service ratio
EBITDA	Earnings before interest, tax, depreciation and amortization
GFI	Government financial institution
GOCC	Government Owned and Controlled Corporation
GRT	Gross receipt tax
IRA	Internal revenue allotment
JICA	Japan International Cooperation Agency
JBIC	Japan Bank for International Cooperation
LBP	Land Bank of the Philippines
LGU	Local government unit
LGUGC	LGU Guarantee Corporation
LOI	Letter of intent
LPCD	Liters per capita per day
LWUA	Local Water Utilities Administration
MCWD	Metropolitan Cebu Water District
MDS	Monthly Data Sheet
MTPDP	Medium Term Philippine Development Plan
MWSS	Metropolitan Waterworks and Sewerage System
NEDA	National Economic and Development Authority
NRW	Non-revenue water
NWRB	National Water Resources Board
ODA	Official Development Assistance
PFI	Private financial institution
PIU	Project implementing unit
PMO	Project management office
PNSDW	Philippine National Standard for Drinking Water
POW	Program of works
PWRF	Philippine Water Revolving Fund
PWRF SP	Philippine Water Revolving Fund Support Program
PWSSR	Philippine Water Supply Sector Roadmap
ROE	Return on equity
RWSA	Rural Waterworks and Sanitation Association
SSIP	Small Scale Independent Provider
TOR	Terms-of-reference
WB	World Bank
WD	Water district
WSP	Water service provider
WTP	Water treatment plant

Table of Contents

Contributors.....	v
Technical reviewers.....	v
Acknowledgment	vi
Abbreviations	vii
Introduction	xi
I. WATER SERVICE PROVISION, REGULATION, AND FINANCING	1
CHAPTER 1. AN OVERVIEW OF THE PHILIPPINE WATER SUPPLY SECTOR	2
Water supply service levels.....	2
Market structure.....	3
Performance of water service providers	5
CHAPTER 2. REGULATION OF WATER SERVICE PROVIDERS	7
National government policy.....	7
Laws governing water service providers.....	7
Regulatory institutions	9
Water rights and regulation	11
Economic regulation	11
Quality regulation.....	16
CHAPTER 3. WATER SERVICES FINANCING	17
Municipal water finance: An ODA-centric structure.....	17
Size of municipal water debt market.....	19
Estimating potential financial demand.....	20
Key considerations for participation in water projects	20
II. DEVELOPING PROJECTS AND ASSESSING FEASIBILITY	23
CHAPTER 4. PROJECT AND FEASIBILITY STUDY PREPARATION	24
Project preparation	24
Efficiency improvement program	28
Alternative analysis.....	29
CHAPTER 5. ELEMENTS OF WATER SYSTEM DEVELOPMENT	31
Demand analysis and forecasting	31
Developing water sources.....	35
Water treatment	38
Water transmission and distribution	41
CHAPTER 6. PROJECT APPRAISAL	43
Due diligence checklist for project appraisal	43
Institutional analysis	44
Focus on financial modeling and forecasting	46
Technical / operational assumptions.....	46
Financial assumptions.....	47
III. LOAN APPLICATION, APPROVAL AND IMPLEMENTATION	51
CHAPTER 7. LOAN APPLICATION AND APPROVAL	52
CHAPTER 8. LOAN IMPLEMENTATION	55
Procurement.....	55
Project monitoring and supervision	59
Appendix I. LWUA Survey Results: WD Performance Indicators Industry Average (2006)	66
Appendix 2.A. Scoring System for Creditworthiness Classification of Water Districts	68
Appendix 2.B. Classification results (as of 2008)	69
Appendix 2.C. Rating system for water districts in the Philippines.....	74
Appendix 3. List of LGUs operating water utilities with borrowing capacity of P60 million and above (as of 2008)	78
Appendix 4. Retawon City case study.....	80
Appendix 4.A. Retawon City Water District	81
Appendix 4.B. Regional Water Tariffs as of September 2007	85

References	86
Contributing authors	87
List of Partners	90
Greetings from the PAWD President.....	91
Directory of water districts	92

Figures

Figure 1. Water supply sector structure	3
Figure 2. PWSSR: correlation of issues, strategies and programs.....	8
Figure 3. Degrees of regulation of water service providers.....	11
Figure 4. Financial flows to the water supply sector.....	17
Figure 5. Schematic for net present-value analysis	30
Figure 6. Maximum day vs. Average day demand.....	32
Figure 7. Peak hour demand and average day demand.....	33
Figure 8. Process flow for a loan account	52
Figure 9. Procurement flowchart for consulting services.....	56
Figure 10. Procurement flowcharts for infrastructure projects	57
Figure 11. Stages/activities of a water supply project	61
Figure 12. Monitoring structure/s and reporting flow.....	64

Tables

Table 1. Market share in urban and rural populations	3
Table 2. Water districts by category	4
Table 3. Selected performance indicators of water districts.....	5
Table 4. Result of performance benchmarking for small town water supply	6
Table 5. List of major legislation relevant to water supply	10
Table 6. Meter service ratio.....	14
Table 7. Eo 279 creditworthiness classifications and funding source	18
Table 8. Rating system for water districts	19
Table 9. Estimates of investment demand for water supply infrastructure.....	20
Table 10. Components of “in-place” pricing.....	27
Table 11. Economic life of common water supply facilities	30
Table 12. Maximum-day to average-day demand ratio.....	32
Table 13. Assumptions in calculating nrw in the absence of actual data.....	35
Table 14. Pros and cons of surface and groundwater development.....	36
Table 15. Minimum distance between wells	38
Table 16. Comparing major water treatment technologies	40
Table 17. Water treatment process selection.....	40
Table 18. Loan terms for water projects	48
Table 19. Checklist of loan application requirements	53
Table 20. Activities to monitor in a water supply project.....	62
Table 21. Suggested performance indicators.....	63

Boxes

Box 1. Tariff setting guidelines of LWUA for water districts.....	12
Box 2. NWRB Tariff setting guidelines	15
Box 3. Metropolitan Cebu Water District vs. Margarita Adala	21
Box 4. Needs/problem analysis.....	24
Box 5. Possible approaches to solving a problem.....	25
Box 6. Physical elements considered in developing cost estimates	26
Box 7. Guiding Principles of RA 9184.....	55
Box 8. What is monitoring?.....	59

Introduction

This guidebook is designed to provide private and government-owned banks with information helpful in reviewing and appraising loan applications for investments in water supply projects, as well as inform borrowers about loan requirements, evaluation parameters and the application process.

Developed by a team of industry experts from the Local Water Utilities Administration, the National Water Resources Board, Metro Cebu Water District, LGU Guarantee Corporation, and members of the USAID-assisted Philippine Water Revolving Fund Support Program, this guide is an excellent resource for bank account officers, bank credit committee members, water project investors and guarantors, officers and directors of water districts, LGU officials involved in water regulation, private sector operators, and regulators.

The guidebook is divided into three main sections: Section I provides an overview of the current state of water services provision, regulations, and financing; Section II discusses the components of water project development and feasibility study preparation; and Section III focuses on loan appraisal and project implementation.

As with any guidebook, periodic updating is needed to maintain currency and relevance. Your feedback is appreciated as we continue to make this material more useful in the evaluation and appraisal of water supply projects.

I.

WATER SERVICE PROVISION, REGULATION, AND FINANCING

Chapter 1. An overview of the Philippine water supply sector

Investments in water service have failed to grow at par with population growth over the past decade. Instead of raising levels of access to safe water supply, service coverage has in fact slipped from 81.4 percent in 1999 to 80 percent in 2002, and only slightly increased to 80.2 percent in 2004. In keeping with targets of the Millennium Development Goals, the Philippines committed to cut by half the number of people without access to safe water by 2015. In 2004 the population estimate was set at 83.18 million; thus the target is to provide safe water supply to 8.3 million more people.

The responsibility of providing this service rests with more than 5,000 water service providers (WSP). These include approximately 500 water districts (WDs); 1,000 LGU-managed systems; 3,000 barangay water services; 500 rural water associations; 200 cooperatives; and 9 private firms, including the two Metro Manila concessionaires Manila Water Company and Maynilad Water Services.¹ A large but unknown number of small-scale independent providers (SSIP) also supply piped water in some communities or sell water from trucks and handcarts.

Various policies issued over the years, combined with numerous market coping mechanisms, have produced a complex network of water service providers. Republic Act 6234 created MWSS. Presidential Decree 198 authorized the creation of water districts and the Local Government Code authorized LGU-run systems. Executive policies promoted the creation of community-based water service providers—often a pre-condition for local governments to obtain government or donor financing—and the government’s policy of private sector participation resulted in the establishment of two concessionaires in Metro Manila.

The failure of formal water service providers to deliver

adequate, quality service prompted households to drill their own wells, purchase vended water or get piped service from small-scale independent providers, all with different business models, governance structures, levels of performance and government oversight.

Water supply service levels

Water supply services are classified into three levels based on components of the service:

- **Level 1 service.** This is the simplest form of water service, based only on a developed source which may be a spring, river intake structure or a deep well. Water is seldom treated or disinfected and beneficiaries, some coming from as far as 250 meters away, must fetch water using buckets and containers. An average 20 liters per capita per day is consumed by users.
- **Level 2 service.** This system provides communal/public, pipeline/s and faucets at strategic locations in the community. Barangays usually adopt this when the source, usually a spring, is elevated enough to allow the water to flow by gravity. Water disinfection may be present but is often unreliable, and beneficiaries must also fetch water in buckets and containers. The farthest user is about 25 meters away and the average consumption is 60 liters per capita per day.
- **Level 3 service.** This is a system that provides piped connections to households and commercial establishments, with consumption of at least 100 liters per capita per day.

Components commonly found in different systems

System component	Level I	Level II	Level III
Developed source	✓	✓	✓
Water treatment		sometimes	✓
Transmission		✓	✓
Distribution – Communal		✓	✓
Distribution – Household and commercial			✓



¹World Bank, “Philippines: Meeting Infrastructure Challenges,” 2005.

Market structure

A total 80 percent of the population currently receives water from recognized water service providers—55 percent are served by LGUs and community-based organizations; 20 percent by water districts; and 5 percent by private operators. The remainder receives water through informal providers. Officially recognized providers are required to meet national water quality standards; no such oversight exists for informal providers.

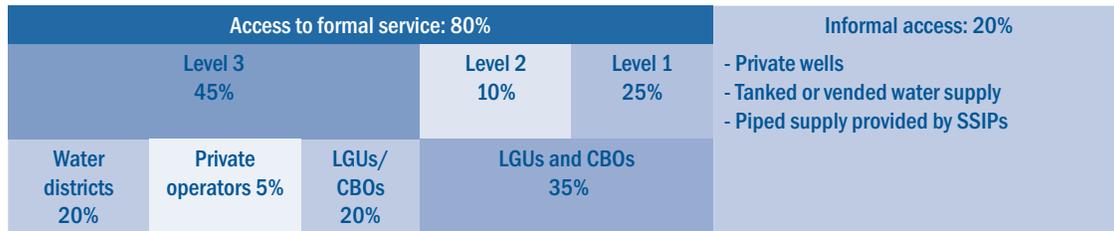
Of greatest interest to the financial community are those organizations providing Level 3 services to households. A summary of the market structure is presented in Figure 1 and Table 1.

Water districts

In the 1970s advocacy for corporatized service providers grew, paving the way for Presidential Decree 198 or the Provincial Water Utilities Act of 1973. PD 198 authorized the creation of water districts and established the Local Water Utilities Administration (LWUA) as a financing institution primarily for water projects.

PD 198 required LGUs to initiate the creation of water districts through a resolution by the LGU legislative body (local sanggunian). Such resolutions formed the water districts, their initial boards of directors, and transferred assets of the existing waterworks system to the new districts. Under PD 198, municipal and city mayors or governors have the authority to appoint subsequent members of the Board of Directors.²

Figure 1. Water supply sector structure



Source: WB Report, Philippines: Meeting Infrastructure Challenges, 2005

Table 1. Market share in urban and rural populations (%)

Water service provider	Urban	Rural
LGUs/CBOs	40	65
Water districts	30	10
Private operators	10	-
SSIPs	15	10
Self provision	5	15
Total	100	100

Source: MTPDP 2001-2004 and WB-funded Filipino Report Card on Pro-poor Services (2001)

²Where a water district covers several municipalities, the mayor of the municipality or city which has at least 75% of service connections will be the appointing authority. Otherwise, the authority is vested on the provincial governor.

PD 198 required LGUs to forward resolutions to LWUA, which would issue them a Conditional Certificate of Conformance for the privilege to operate the public utility. PD 198 defined water districts as quasi-public, autonomous corporations providing a public service. As such, water districts have authority to exercise powers, rights, and privileges of a private corporation. Their assets were initially provided by LGUs under staggered payment arrangements. The national government does not provide water districts with equity nor any share of national revenues, which has compelled them to generate sufficient income to recover operating and maintenance costs, repay LGUs for their investment, and repay any subsequent loans from LWUA for larger capital expenditures.

In 1991, the Supreme Court ruled that water districts are government-owned and controlled corporations (GOCCs), thereby requiring them to comply with the Commission on Audit’s requirements, Civil Service rules and regulations, the Salary Standardization Law, and government procurement guidelines. The ruling, however, failed to define whether water districts are owned by the LGUs or the national government. Water districts are not accountable to any national agency oversight. The LWUA, under administrative supervision of the Department of Health (DOH), retains its authority to require water districts with outstanding loans to meet their own operational and financial performance indicators.

As of March 2007, LWUA has on record 473 operational WDs serving 622 cities and municipalities and approximately 14 million people. LWUA classifies water districts as Small to Very Large, based on the number of service connections, cash flow, financial capability and the scope or complexity of operation. Table 2 shows the water districts by category and geographic distribution.

Water districts function as corporatized entities, with a general manager reporting to a board of directors. The board provides policy direction and approves major capital projects, corresponding financing and tariffs. The board has the authority to hire and fire the general manager within the general framework of Civil Service Rules and Regulations. While WDs are covered by the Salary Standardization Law, their boards can exercise some flexibility in providing incentives to management and staff. Most water districts maintain a professional staff with core knowledge about the utility’s technical operations, accounting and financial management. The board also provides management and staff with some buffer from political changes that take place during and after LGU elections.

Local government units

Under the Local Government Code of 1991, responsibility for ensuring water supply and sanitation services was devolved to local government units. Some LGUs rely on third party providers (water districts, community-based operators or concessions) to deliver services while others directly manage water services within their municipalities. LGU-operated water systems generally serve between 100 to 5,000 customers, with the municipal engineer responsible for the utility’s operation. Most LGUs that manage water supply services do not ring-fence their utilities as independent economic enterprises and have no way of evaluating utility performance.

LGU revenues come from three principal sources: internal revenue allotments (IRAs), local taxes and business licenses, and fees and revenues earned by economic enterprises. IRAs are automatic appropriations and cannot be earmarked by the national government. LGUs can use up to 20 percent of their annual IRA allocations for development projects, which can be leveraged by borrowing money or issuing

Table 2. Water districts by category (December 2007)

Category (service connections)	Luzon	Visayas	Mindanao	Total
Very Large (19,000–135,000)	3	3	3	9
Large (15,000–58,500)	12	4	2	18
Big (3,500–27,000)	38	1	11	50
Medium (2,300–14,000)	41	14	9	64
Average (1,500–7,500)	22	12	12	46
Small (100–4,500)	153	72	61	286
Total operational water districts	269	106	98	473
Non-operational water districts				144
Grand total				617

Source: LWUA Corporate Planning Office and Management Services

bonds, as long as the LGUs' debt service obligations remain within 20 percent of their regular gross income.

Community-based organizations

Community-based systems, particularly rural waterworks and sanitation associations (RWASAs) and barangay water supply associations (BWSAs) and cooperatives generally provide levels 1 and 2 services. These systems, usually serving between 100 to 500 connections, are usually constructed using national government grants and appropriations or donor grants, with only token counterpart resources from the association. Most of these systems require continued subsidy from the LGU to cover operating costs and few have expanded their systems.

Private operators and small-scale independent providers

The two biggest private operators are Manila Water Company Inc. and Maynilad Water Services, Inc. Both hold 25-year franchises under the National Water Crisis Act of 1995. Their contracts, executed in 1997, include performance and regulatory guidelines and provide for tariff adjustment processes. Both concessionaires accessed commercial bank funding, with Manila Water raising capital through public offering of shares.

Other private operators are bulk water suppliers and management contractors that have received certificates of public convenience from the National Water Resources Board (NWRB), and small and medium enterprises that have secured business permits from their respective LGUs. These organizations include real estate developers, homeowners associations, local entrepreneurs and mobile water vendors.

Performance of water service providers

Water districts and water service concessions provide the best information on operations and financial performance, especially as water districts with outstanding loans must submit annual financial and performance reports. As of June 2008, almost 97 percent of water districts had outstanding loans with LWUA.

Each year LWUA conducts a survey to determine industry averages on key operating and financial indicators³ (refer to Table 3). The agency has also classified water districts according to a creditworthiness index developed in response to EO 279.⁴

Water districts provide more reliable service than other publicly operated water providers, particularly in terms of compliance with water quality standards, continuous supply and hydraulic pressure, and financial performance. Most are able to routinely cover maintenance costs while servicing outstanding debt. Only a few however manage to accumulate sufficient capital to finance system improvements.

A survey conducted by the Water and Sanitation Program with support from the World Bank showed that LGU-managed water systems performed poorly compared to other service providers (see Table 4). The survey, called "Benchmarking Performance of Small Town Water Supply," covered 45 utilities from water districts, LGU-run systems, RWASAs, cooperatives and private operators serving between 600 to 600,000 connections.

Table 3. Selected performance indicators of water districts (industry averages)

Indicators	Overall	Very Large	Large	Big	Medium	Average	Small
Financial							
Current ratio	5.22	4.15	4.32	3.90	6.95	3.69	5.38
Debt service ratio	4.20	8.40	4.04	8.18	3.71	3.75	2.50
Net profit ratio	0.10	0.23	0.10	0.15	0.09	0.24	0.06
Debt equity ratio	0.61	0.40	0.57	0.36	0.52	0.73	0.77
Operational							
Collection ratio (%)	90	87	87	98	89	92	88
Non-revenue water (%)	24	34	31	26	26	27	20
Service connection/staff	155	167	192	187	179	148	121

Note: Appendix 1 contains additional data on industry averages; Appendix 2 on the Creditworthiness Index and classification results.

³Results are posted on the LWUA website: <http://www.lwua.gov.ph>

⁴The credit classification results may be accessed from LWUA upon request.

Table 4. Result of performance benchmarking for small town water supply

Indicators	WD	LGU	RWSA/ Coops	Private
Sample size	18.00	10.00	9.00	8.00
Service coverage (%)	69.00	57.00	66.00	66.00
Availability (hours)	23.00	18.00	20.00	22.00
Consumption (liters per capita/ day)	120.00	96.00	127.00	144.00
Non-revenue water	26.00	36.00	16.00	26.00
Operating ratio	0.70	1.18	0.87	0.74
Accounts receivables (months)	1.30	2.30	2.60	1.70
Average tariff (P/m3)	17.82	7.22	7.99	15.37
Collection efficiency (%)	99.00	91.00	99.00	102.00
Staff/ 1000 connections ratio	6.80	9.00	6.60	5.80

LGU-managed water systems have the lowest coverage ratios, shortest periods of water availability per day, and deliver the least amount of water to consumers. LGUs charge very low average tariffs which makes it difficult for them to meet operations and maintenance costs. They have low revenue collection efficiency, high collection periods, the highest number of staff per 1000 connections, and the highest levels of non-revenue water. Despite poor performance, however, LGUs continue to operate water utilities because of unchallenged mandates to provide the service.

Banks also see LGUs as viable borrowers because they can secure taxes or revenue as collateral for loans and, for government financing institutions, the assignment of internal revenue allotment. The Bureau of Local Government Finance (BLGF) under the Department of Finance (DOF) certifies LGUs' borrowing capacity and many lenders consider income class and the borrowing capacity of LGUs as proxies for creditworthiness. Appendix 3 lists the first, second, and third income class LGUs that have a borrowing capacity of at least P60 million and are not served by WDs (as of 2008).



Chapter 2. Regulation of water service providers

National government policy

The 2004–2010 Medium Term Philippine Development Plan (MTPDP) has set a target of increasing access to safe water and basic sanitation to 96 percent by 2010. The MTPDP outlines several specific strategies to achieve this:

- Focus national government subsidies and investments on the 432 waterless municipalities⁵
- Ensure all municipalities and barangays that receive water supply services have sanitation facilities for proper disposal of wastewater/septage
- Provide capacity-building programs and technical assistance on water supply and sanitation planning, management and project implementation for all WSPs needing assistance
- Promote private sector investment in provision of water services
- Monitor the quality of drinking water in selected poor communities

The MTPDP's objectives, strategies and action plans are detailed in the Philippine Water Supply Sector Roadmap, a product of an inter-agency effort led by the National Economic and Development Authority (NEDA) and the National Water Resources Board.

The Roadmap focuses on three key result areas: (1) institutional strengthening; (2) capacity building; and (3) strategic alliances. The provision of adequate infrastructure ties in with the goals of these three areas. Figure 2 summarizes the key issues, strategies, and priority program proposals addressed by the Roadmap.

Laws governing water service providers

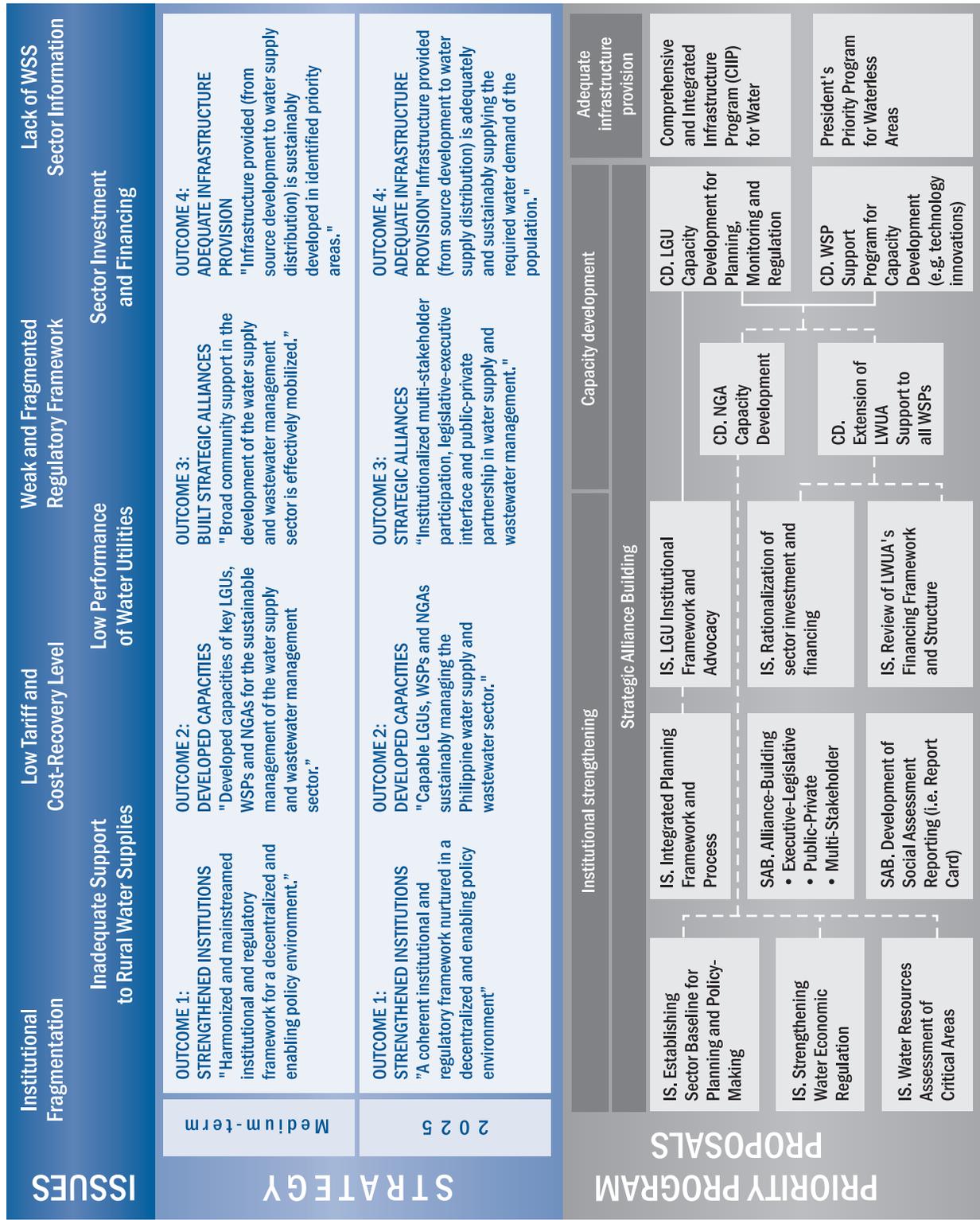
The principal laws that govern the regulation of water service providers include:

- **PD 198.** The Provincial Water Utilities Act of 1973 authorized the formation of local water districts and chartered the LWUA to facilitate improvement of local water utilities and serve as a specialized lending agency for water utilities.
- **RA 7160.** The Local Government Code devolved the enforcement of laws on cleanliness and sanitation to local governments and the provision of water supply and sanitation services to local constituents; the Code also vests economic regulation of the local water utility to the local Sanggunian (legislative body).
- **EO 123.** This EO, Reconstituting National Water Resources Board, formed the NWRB Board, transferring the NWRB to the Office of the President and the tariff approval of water districts from LWUA to NWRB.
- **RA 6234.** The Charter of the Metropolitan Waterworks and Sewerage System vested jurisdiction, supervision, control and tariff-setting powers over waterworks and sewerage systems in Metro Manila to MWSS.

A list of major legislation relevant to water supply is summarized in Table 5.

⁵ A municipality is considered waterless if 50% or more of its households have no access to potable water.

Figure 2. Correlation of issues, strategies and programs



Source: Philippine Water Supply Sector Roadmap, 2009

Regulatory institutions

Several government organizations are involved in the regulation of water services, with the National Water Resources Board, the Local Water Utilities Administration and local government units being the principal regulatory agencies.

The NWRB has policy making, regulatory, and quasi-judicial functions. It is responsible for resource regulation—i.e., ensuring optimum development, utilization, conservation, and protection of the country's water resources consistent with the principles of integrated water resource management. It allocates water resources by issuing water rights and is also responsible for economic regulation, particularly the grant of franchises to private and community-based water service providers, as well as setting tariffs and adjustments for all water service providers, except LGUs and the MWSS.

Despite its broad functions, the NWRB has very limited resources and relies on LWUA to review and approve tariffs of water districts. This allows the NWRB to focus efforts on regulating private and small-scale, community-based service providers as well as some LGU-run systems. To date, it has reviewed and approved tariffs for only a handful of the estimated 6,000 small-scale utilities with franchises. Five LGUs have already opted for consensual regulation by NWRB.

LWUA was originally established to provide oversight, financing and technical assistance to water districts and more recently, RWSAs. As part of its financing function, LWUA reviews and approves tariffs and monitors performance of water districts with outstanding loans. LWUA can exercise step-in rights for non-performing water districts but it usually does so only when water districts default on loans. It can also prescribe interim measures, such as assigning a sixth board member in a water district with outstanding loans. In case of loan default, LWUA can replace a water district's entire board and take over its management until it recovers and is able to resume payments.

The Local Government Code granted LGUs authority to regulate all economic activities within their constituency, including self-operated water utilities. LGU legislative bodies approve tariffs of water systems operated under the management of the local chief executive.

Aside from NWRB, LWUA and LGUs, other regulatory bodies that enforce pricing and performance agreements include the MWSS Regulatory Office and Subic Water Regulatory Office. Regulations on drinking water quality standards are set and enforced by the Department of Health.



Table 5. List of major legislation relevant to water supply

Republic Act 6324, creating MWSS, as amended by PDs 425,1269 and 1406	MWSS was created in 1971, tasked with providing water supply and sanitation services to cities and municipalities in Metro-Manila and adjacent urbanized areas of Rizal and Cavite provinces. In 1997, MWSS was privatized, its management and operations transferred to two private firms under a 25-year concession contract.
Provincial Water Utilities Act of 1973, as amended	The 1973 PWUA authorized the formation of local water districts in provincial centers of the Philippines and provided for its governance and administration. It also created the LWUA as a specialized lending institution to provide financing and technical assistance for the development of local water districts. LWUA was also mandated to review tariffs of local water districts.
Water Code of the Philippines of 1976, as amended	The Water Code of 1976 consolidated all existing legislation relating to ownership, development, utilization, exploitation and conservation of water resources and mandated the NWRB to be responsible for the implementation of the Water Code, including the appropriation of water resources through the grant of water permits and imposition of penalties for administrative violations.
PD 424 (1974)	PD 424 mandated NWRB as the government coordinating body for all water resources development activities.
Public Service Law of 1977 (PD1206)	PD 1206 directed the NWRB to supervise and control all water utilities and their franchises, equipment, and other properties, as well as regulate water rates charged by waterworks operators (except those falling under the jurisdiction of MWSS and LWUA) and to act as an appeal body on tariff matters of water districts under LWUA's jurisdiction. Executive Order 123 issued in September 2002 gave the NWRB authority to approve tariffs of water districts.
Local Government Code of 1991	The Local Government Code mandated the transfer of the internal revenue allotments to LGUs and responsibility for providing basic services to their constituents, including water supply and sanitation services.
BOT Law of 1990 (RA 6957) as amended by RA 7718 of 1994	RA 6957 authorized the financing, construction, operation and maintenance of government infrastructure projects, including water supply and sanitation, by the private sector.
National Water Crisis Act of 1995	The Water Crisis Act provided the legal basis for the privatization of MWSS in 1997.
Philippine Environment Code of 1977 (PD 1152)	The Environment Code prescribed guidelines for the protection and improvement of the quality of water resources and defined responsibilities for surveillance and mitigation of pollution incidents.
Philippine Environment Impact Statement System of 1978 (PD 1586)	PD 1586 mandated the submission of environmental impact statements for government and private sector projects affecting the quality of the environment.
Philippine National Standards for Drinking Water, issued through Department of Health Administrative Order No. 2007-0012	This Order set the standards for the quality of drinking water; the DOH is mandated by the Code on Sanitation to update these standards periodically.

Source: World Bank, "Philippines: Meeting Infrastructure Challenges," 2005 (Appendix 6 of the report)

Water rights and regulation

Riparian water rights belong to those who possess land near a water source. Landowners whose properties are adjacent to a body of water have the right to make reasonable use of it. Allocations are made proportionate to the applicant’s frontage on the water source, if there is not enough water to satisfy all users. These rights cannot be sold or transferred and water cannot be transferred out of the watershed.

Water rights give the right to extract and use water from a water source, e.g., river, stream, lake or groundwater. With increasing water scarcity, water rights are becoming more important for farmers, industrial developers and municipal governments.

The Water Code of the Philippines provides the policy framework for allocating rights among competing uses of water. Water may be appropriated for the following purposes (in order of descending priority): domestic, municipal uses; for irrigation, power generation, fisheries, livestock rearing; and for industrial, recreational and other purposes.

The following excerpts relate to the provision of water allocations:

Article 22 specifies that between two or more appropriators of water from the same source of supply, the time of issuance of the water right shall define priority, except in times of emergency when the use of water for domestic and municipal purposes shall have a better right over all other uses. Provided that where water shortage is recurrent and the appropriator for municipal use has a lower priority in time of appropriation, then it shall be his duty to find an alternative source of supply in accordance with conditions prescribed by the NWRB.

Article 30 indicates that all water permits are subject to modification or cancellation by the NWRB, after due notice and hearing, in favor of a project of greater beneficial use for multipurpose development, and a water permittee who suffers shall be duly compensated by the entity or person in whose favor the cancellation was made.

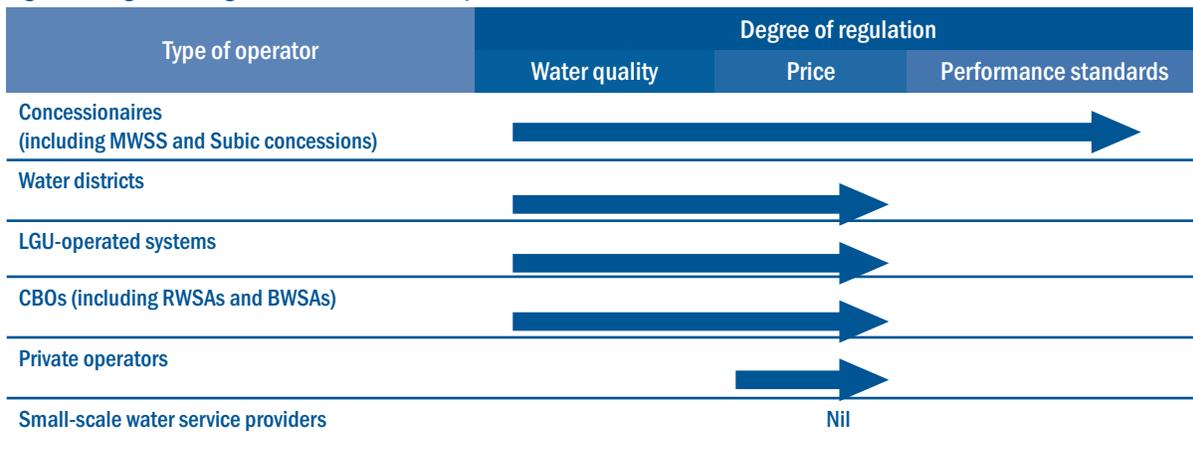
Water utilities are required to get water permits before they can develop bulk sources from either ground or surface waters.

Economic regulation

The power to regulate water service providers includes authority to grant a franchise to operate and to review and approve tariffs. The extent of regulation depends on the type of water provider and the scope of the regulator’s authority. As depicted by Figure 3, private concessionaires are more strictly regulated—scope and standards of service, penalties and incentives are outlined in their contracts. Regulation over water districts, LGU and barangay-operated systems focuses on water quality and pricing; no performance standards or targets are enforced. Independent private operators and small-scale service providers experience the least amount of regulation.

Different methodologies and procedures are used for setting and approving tariffs: NWRB uses a return on rate base approach, LWUA uses a cash-flow approach, and LGUs do not have a standard basis. NWRB and LWUA both use cost-based pricing principles and standardized tariff setting methodologies and procedures. LGUs, on the other hand, can formulate their own pricing principles and guidelines.

Figure 3: Degrees of regulation of water service providers



Boxes 1 and 2 discuss the tariff setting and adjustment guidelines of LWUA and NWRB, respectively.

Box 1. Tariff setting guidelines of LWUA for water districts

Under Presidential Decree 198 and Letter of Instruction 700, LWUA is mandated to review and approve the water tariffs charged by both Water Districts and Rural Water Supply Associations.⁶ While EO 123 transferred this function to the NWRB on September 12, 2002, LWUA continues to review and approve tariffs of WDs and RWSAs, based on an agreement between LWUA and the NWRB.

LWUA often provides first-time borrowers with a checklist of requirements to allow the utility to undertake reforms/adjustments prior to LWUA conducting its rate evaluation. LWUA uses data provided by the water service provider and its in-house information to analyze the WSP's performance and rate structure. If requested by the WSP, LWUA may present and discuss its findings to the WSP's Board of Directors and Management. The WSP may adopt, modify, revise, or enhance the result of the Tariff Review by LWUA and finally file with the LWUA its proposed water tariff structure.

Utilities set tariffs to sustain the cost of operations and repay capital infrastructure costs. Utilities may also be required to adjust tariffs to ensure the repayment of a specific loan or as part of a restructuring process. Increases in water tariff rates usually follow a rate review by the WSP and LWUA as part of a loan covenant/restructuring agreement.

Role of the water district and LWUA in tariff setting

To substantiate the need for an adjustment in water tariffs, the WD must comply with the following requirements:

A. Tariff review

1. Present a Board resolution requesting an evaluation of water tariffs and the WD's financial statements and operating highlights for at least the two operating years preceding the request.
2. Five-year cash flow projections that show the level of service, committed service efficiency, and all financial requirements of the WD. Projected cash flow must demonstrate the adequacy of the proposed water tariff and the ability of the utility to enforce this rate based on the policies and applicable guidelines adopted by LWUA. The projections should reflect estimated:
 - i. Growth in number of households served, gross revenue
 - ii. O&M expense (wages and salaries, power and chemicals, etc.)
 - iii. Programs to reduce NRW (maximum of 25%), increase revenue, and improve collection efficiency (minimum of 90%)
 - iv. Capital investment to support above proposed growth and efficiency improvement programs
 - v. Reserve requirement
3. Where the proposed rate increase includes provision for loan restructuring or other forms of debt relief, the WD must also submit a report that details the events and circumstances leading to the default and the corrective measures (programs and supporting capital investments) to be undertaken to achieve full cost recovery. Financial data that show the results of events or how present operations depart from previous projections shall also be submitted.

⁶ RWSAs were created by virtue of Executive Order 577. RWSAs are non-stock, non-profit cooperative associations organized and registered with the LWUA.

B. Conduct of a public hearing

4. To comply with PD 198 and Sec. 5 of Letter of Intent (LOI) 700, LWUA shall conduct a public hearing on the proposed water tariff adjustment. The proposed water tariff increase should be presented in each of the municipalities covered by the WD. The WD may also opt to present the proposed tariff increase/s at the barangay level.
5. Preparatory activities leading to the public hearing are primarily the WD's responsibility but they should be coordinated with LWUA for consultation or guidance. Section 3 of LOI 744 directs LWUA and the WDs to prepare a comprehensive program for public consultation. This can include individual notices incorporated with the water bill, media broadcast and/or postings of notices in conspicuous public locations. All printed materials, pictures of postings made, and receipts of payment for broadcast form part of the documentary evidence for a public hearing. Public hearing notices are to be posted at least seven (7) days prior to the hearing for WDs that serve only one municipality/city, and at least fifteen (15) days for WDs serving two or more municipalities/cities.
6. LWUA and the WD share responsibility for the conduct of the formal public hearing process. A LWUA hearing officer will conduct the public hearing and shall preside over the deliberations of the pros and cons of the proposed WD/WSP tariff increase. The WD's board of directors also usually attend to answer questions during the public hearing. The LWUA hearing officer's report forms part of the rate approval documents.

C. Post-public hearing

7. Once confirmed by LWUA, tariff adjustments are executory and enforceable seven (7) days from posting for WDs serving only one municipality, and at least 15 days of advanced notice for WDs that serve multiple municipalities, without prejudice to an appeal undertaken by a water concessionaire to the National Water Resources Board whose decision is appealable to the Office of the President. An appeal to the NWRB must be perfected within 30 days after the expiration of the seven-day period of posting.

Limits on rate increases

Requests for water rate increases submitted to LWUA are subject to two principal limitations. The first is affordability, limiting water rates (lifeline rate for the initial 10 cubic meters) to no more than five percent of the average income of low-income households. The second is the LOI 700 stipulation that limits increases to no more than 60 percent of existing LWUA-approved water rates.

Tariff formula and design used by LWUA

LWUA uses the principle of full cost recovery in computing water tariffs to allow the WD to recover all costs involved in producing, transmitting and distributing water. As such, water tariffs are designed to generate sufficient revenue to: (1) support the operating expenses of the WD; (2) provide for the maintenance, repair and improvement of the existing system; (3) pay for debt service on capital loans; (4) establish reserves of between 3 to 10 percent of gross revenues; and (5) provide for project equity or capital expenditures as supported by a feasibility study or comprehensive work program. In its review of proposed tariff increases, LWUA reviews all relevant costs to ensure sustainability of the WD as well as its compliance with the following conditions:

- Achieving specific operational efficiency standards including: at least 90 percent collection efficiency, 25 percent or less non-revenue water, and a staffing ratio of one employee per 125 connections.
- Salaries, allowances and other benefits are within the levels and guidelines prescribed by DBM and the Civil Service Commission.
- Capital investments to reduce unaccounted water, expand service coverage or improve other aspects of utility operations are supported by a work program or feasibility study.
- Reserves are accounted for and properly monitored in a joint LWUA-WD savings account.

Most WDs use an increasing block tariff. The first block is the minimum tariff charged to all customers, typically covering the consumption of one to ten cubic meters, but can vary according to customer classification and meter size.

The minimum charge is determined and differentiated using the meter service ratios shown in the Table 6 below. This table provides the multiplier that, when applied to the cost per cubic meter, forms the actual rate paid by the customer. This approach follows the principle that a higher the meter reading means the customer was afforded more convenience, and therefore may be charged a higher rate for water service.

Table 6. Meter service ratio

Customer type	Size of meter (in inches)						
	0.5	0.75	1.0	1.5	2.0	3.0	>3.0
Residential/government	1.0	1.6	3.2	8.0	20.0	36.0	72.0
Commercial A	2 times the tariff of residential based on meter size						
Commercial B	1.75 times the tariff of residential users based on meter size						
Commercial C	1.5 times the tariff of residential users based on meter size						
Commercial D	1.25 times the tariff of residential users based on meter size						
Bulk	3 times the tariff of residential users based on meter size						

Water tariffs are usually divided into four tariff blocks in 10 cubic meter increments. Incremental factors are applied between blocks depending on what the WD board wants to achieve. For example, the utility may sharply increase tariffs for consumption in excess of 20 cubic meters to encourage water conservation, or conversely may offer lower rates to encourage commercial concessionaires to connect or to market excess capacity.

Source: Local Water Utilities Administration

Box 2. NWRB Tariff setting guidelines

The powers and functions of NWRB as an economic regulator can be traced back to the Public Service Commission created under Commonwealth Act 146 and Presidential Decree 1206. PD 1206 gave then National Water Resources Council (later renamed NWR Board through EO 124) the following regulatory functions: i) to adjudicate and grant CPC, CPCN to operators of waterworks utility system and services; ii) to impose penalties for administrative violations and promulgate rules and regulations relative thereto; iii) to supervise and control waterworks utilities and their franchises and other properties, regulate and fix water rates to be charged by waterworks operators, except those under the jurisdiction of the MWSS and LWUA and water districts; iv) to exercise original jurisdiction over all disputes relating to water rates of utilities and decide on appeal on water rates involving water districts; v) to impose and collect Annual Supervision regulation fees or charges from water works systems, and public utility operators pursuant to Commonwealth Act 146. NWRB's regulation of private utilities covers subdivisions, private water operators, resettlement areas, economic zones, rural water and sanitation associations, locators, small scale service providers and condominiums in 78 provinces and 115 cities nationwide.

Tariff setting principles

Tariffs are based on levels of service established in consultation with customers and/or their representative bodies. The proposed tariff should be sufficient to provide the agreed levels of service, such as number of hours of service, water quality, non-revenue water percentage, service coverage, and water pressure. The first page of the tariff proposal should set these goals. Other parameters for rate-setting are: i) use of a 5-year tariff period based on the utility's business plan; ii) use of key performance indicators as benchmarks, to provide basis of projections; iii) use of Excel-based tariff model; iv) calculation of an average ROI to reduce price shocks within the five-year period; and v) at the end of the five-year period, a mechanism for calculation of disallowances or adjustments for excess/deficiencies in meeting the 12 percent ROI, to be applied to succeeding tariff proposals.

Water rates must be adequate to provide for:

- operating expenses excluding those related to non-regulated activities and non-recurring expenses such as losses from *force majeure*;
- depreciation of property in service entitled to return; and
- surplus equivalent to 12 percent of net book value of property in service entitled to return including two months working capital.

Legal requisites

There must be an application for CPC including a tariff proposal submitted under oath by the applicant utility before the water rates are approved. Proposed water rates and the scheduled hearing dates must be published in a newspaper of general circulation in the utility's province at least 15 days before the hearing date. Approved tariff rates must be posted within 7 days from approval in conspicuous places within the service area of the water utility.

Computing proposed water rates

The water rate structure comprises two parts: the minimum and the commodity charge. The minimum charge is also known as service or demand charge. It should be able to cover all the fixed costs required to carry on the vital water supply functions not directly related with production and distribution. It ensures that there will be enough revenues to meet the utility's basic costs during periods of low water sales, such as when there is drought. The minimum charge should be within the ability of low income users to pay for 10 cubic meters of water, and should not exceed 5 percent of the family income of the low income group in the municipality where the water utility operates.

The commodity charge is for consumption beyond the minimum charge. This amount varies according to volume consumption and customer category. The quantity block method is used to convert the determined revenue requirements into the tariff structure to be implemented. This supports NWRB's policy of promoting conservation of water by pricing higher consumption prohibitively. The water rate of commercial/industrial consumers is twice the rate of residential consumers.

Source: NWRB Primer on Tariff Setting and Regulation, March 2005

Recognizing that regulation is an important tool for compelling utilities to provide better service and be more efficient, efforts to improve the regulatory framework and its enforcement are ongoing. NWRB will establish light-handed regulation guidelines for small-scale private providers, focusing on a registration system, issuance of performance standards to guide their operations, and benchmarking. Over the long term the plan is to establish an independent national economic regulator. This requires legislation and thus expected to be a protracted measure.

Quality regulation

Quality standards for drinking water are set and enforced by the Department of Health, as mandated by the Code on Sanitation of the Philippines (Chapter II [Water Supply], Section 9). The DOH periodically issues administrative orders that set the Philippine National Standard for Drinking Water (PNSDW). The standards are intended to minimize health risks by establishing threshold limits for impurities found in drinking water.

The latest PNSDW (2007) identifies more comprehensive parameters for water quality. It advocates an efficient water quality surveillance system and introduces the concept of performance targets through the application of water safety plans. The basis for the PNSDW are international guidelines recommended by the World Health Organization (WHO) and the United States Environment Protection Agency.

The standards apply to all officials, developers and operators of water supply systems, water refilling stations, water vending machine operators, ice makers, drinking water laboratories, and health and sanitation authorities. To enforce these standards, the DOH accredits laboratories that test water quality, and sanitary inspectors of these laboratories are empowered to regularly monitor the quality of water provided by water service providers.



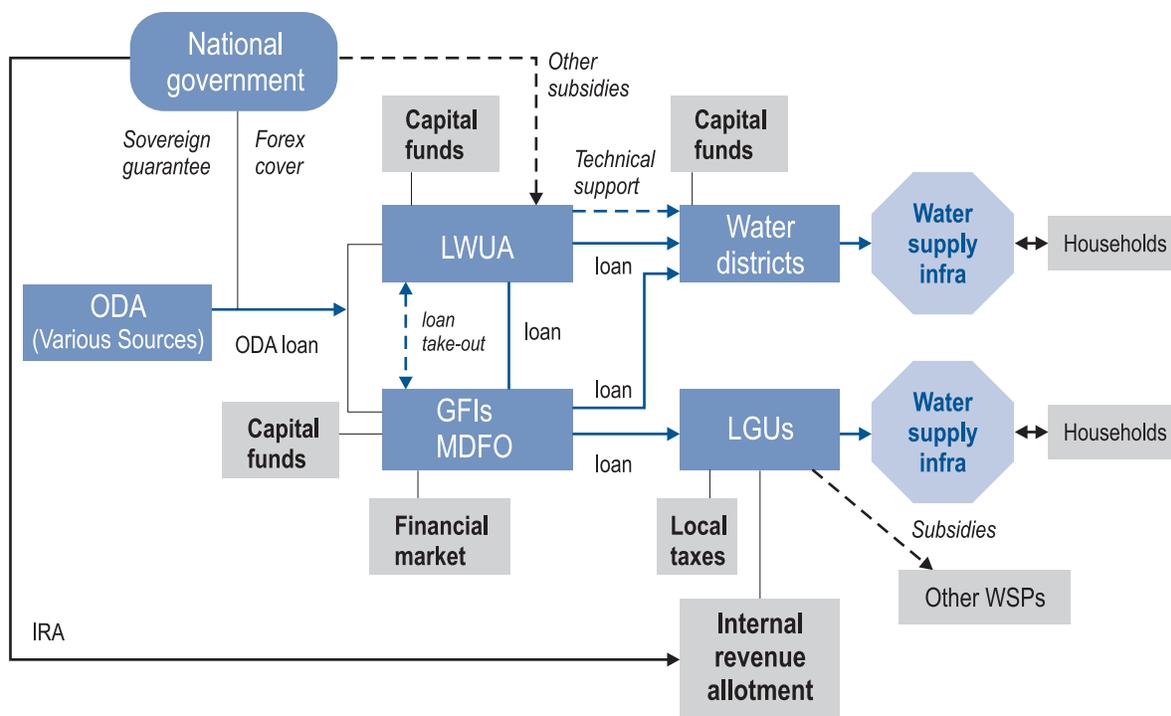
Chapter 3. Water services financing

The credit market system where private funds are gathered, pooled, and lent on a voluntary basis by financial intermediaries for water supply projects is still underdeveloped. With the exception of some recent loan approvals,⁷ most financing of municipal water projects still rely on official development assistance (ODA) loans and grants. That there is very little private capital mobilized for water supply investments indicates a need for better strategies and initiatives by the national government for expanding the involvement of private financing in the sector.

Municipal water finance: An ODA-centric structure

Figure 4 depicts current flow of financing into the water sector. The main source of funding has been official development assistance from various multilateral and bilateral sources. ODA loans are covered by a sovereign guaranty and are typically accompanied by a foreign exchange cover (green line) which transfers the currency risk from the GFI/borrower on record to the national government⁸. These ODA funds are then made accessible to water districts and local government units. ODA loans have repayment periods of as long as 20 years, which are not available from local commercial financing sources.

Figure 4. Financial flows to the water supply sector



Source: PWRFSF

⁷This is the case of Manila Water and Maynilad, the two private concessionaires serving the water supply needs of Metro Manila and surrounding areas. Maynilad recently signed a 10-year corporate notes issue worth \$365 million with lead underwriters BDO Capital & Investment Corp. and Development Bank of the Philippines to fund its program to rehabilitate the pipe network and reduce system losses. Manila Water, meanwhile, issued a P3 billion fixed-rate bond last October 2008.

Another important development is the recent entry of private banks willing to provide loans backed by an LGUGC guaranty. Since December 2006, eight water district projects worth P971 million have been approved for financing by four large private commercial banks. Note that LGUGC is partly owned by the Development Bank of the Philippines.

⁸LWUA has substantial ODA loans that do not have foreign exchange cover. Sovereign guaranty fee and foreign exchange cover fees are eventually passed on to the ultimate user of the funds.

The main policy question that has emerged is how best to allocate these ODA funds and subsidies so that these are used to support the achievement of national water and sanitation priorities and objectives. Executive Order 279 (“Instituting Reforms in the Financing Policies for the Water Supply and Sewerage Sector and Water Service Providers and Providing for the Rationalization of LWUA’s Organizational Structure and Operations in Support Thereof”) requires LWUA to classify water districts into different classes based on their creditworthiness, with “creditworthy” WSPs sourcing their financing requirements from commercial sources. Table 7 below outlines the system envisioned in EO 279.

Though EO 279 represents a significant policy direction toward mobilizing private sector resources, it has two fundamental weaknesses:

- The credit rating of a particular WD is not set by the market but by LWUA based on a rating system⁹ approved by the EO 279 Oversight Committee. This poses a significant conflict of interest since LWUA is also the principal lending institution to the WDs and can use its rating system to maintain dominance in the market.
- The system has an inherent moral hazard as it effectively encourages utilities to avoid becoming credit worthy and thus able to continue accessing concessional or grant financing.

Given the weaknesses inherent in LWUA’s credit rating system, LGUGC formulated a more market-based rating system with the assistance of CRISIL (a Standard and Poor’s affiliate). This system assesses the following types of risks: regulatory, economic, financial, operating and management; and assigns a rating from AAA to D as shown in Table 8. A more comprehensive description of this system can be found in Appendix 2C.

Table 7. EO 279 Creditworthiness classifications and funding source

Credit classification	Recommended financing source
Creditworthy	<ul style="list-style-type: none"> • WSPs shall be eligible to source financing at commercial lending rates from GFIs and PFIs. • LWUA shall enhance and streamline its waiver procedures to effect the reform objectives/policies enunciated in EO279. • GFIs shall strengthen their skills base and develop lending programs specially tailored to the needs of the water supply and sewerage sector.
Semi-creditworthy	<ul style="list-style-type: none"> • WDs shall be eligible to source concessional debt financing from LWUA as well as GFIs and PFIs when possible
Pre-creditworthy	<ul style="list-style-type: none"> • WDs shall be eligible to source grants from donors and deep concessional financing from the LWUA
Non-creditworthy	<ul style="list-style-type: none"> • WDs shall continue to be eligible for financing under the LWUA. However, LGUs are hereby encouraged to provide financial and operational support for such WDs and other WSPs within their respective jurisdictions.

⁹ In addition to the LWUA rating system for WDs, USAID through the Philippine Water Revolving Fund Support Program recently assisted the LGUGC to develop a market-based methodology for rating the creditworthiness of WDs. This system was developed by CRISIL, a Standard and Poor’s subsidiary based in India. LGUGC now uses this system as part of its due-diligence on utilities applying for guarantees.

Size of municipal water debt market

Traditionally, LWUA financed most loans for municipal water infrastructure. In recent years, both the Development Bank of the Philippines (DBP) and the Land Bank of the Philippines (LBP) have begun to originate loans for water projects using ODA funds. Currently, LWUA and the GFIs have about P19.6B in outstanding loans for water supply projects. LWUA has the largest share, approximately P15.6B.¹⁰ DBP has an approved loan portfolio for water of P4.9B, though its actual disbursed exposure is still only

at P2.5B. LandBank has issued P1.5B in loans for water projects and has a loan exposure to LWUA amounting to roughly P1B. Since LWUA is not under the regulatory supervision of the Bangko Sentral ng Pilipinas, most water debts are outside the accounting records of government financial institutions.¹¹ Meanwhile, private financing institutions have recently entered the market with a total exposure of about P1B using the guarantee facility of LGUGC.

Table 8. Rating system for water districts

Investment Grade Ratings	
AAA	(Triple A) Highest Safety Entities rated 'AAA' are judged to offer the highest degree of safety with regard to timely payment of financial obligations.
AA	(Double A) High Safety Entities rated 'AA' are judged to offer a high degree of safety with regard to timely payment of financial obligations.
A	Adequate Safety Entities rated 'A' are judged to offer an adequate degree of safety with regard to timely payment of financial obligations. However, changes in circumstances can adversely affect such entities more than those in the higher rating categories.
BBB	(Triple B) Moderate Safety Entities rated 'BBB' are judged to offer a moderate safety with regard to timely payment of financial obligations for the present; however, changing circumstances are more likely to lead to a weakened capacity to pay interest and repay principal than for entities in higher rating categories.
Speculative Grade Ratings	
BB	(Double B) Inadequate Safety Entities rated 'BB' are judged to carry inadequate safety with regard to timely payment of financial obligations; they are less likely to default in the immediate future than other speculative grade entities, but an adverse change in circumstances could lead to inadequate capacity to make payment on financial obligations.
B	High Risk Entities rated 'B' are judged to have greater likelihood of default; while currently financial obligations are met, adverse business or economic conditions would lead to lack of ability or willingness to pay interest or principal.
C	Substantial Risk Entities rated 'C' are judged to have factors present that make them vulnerable to default; timely payment of financial obligations is possible only if favorable circumstances continue.
D	Default Entities rated 'D' are in default or are expected to default on scheduled payment dates. Such entities are extremely speculative and returns from these entities may be realized only on reorganization or liquidation.

¹⁰ MDFO has also become a conduit of funds for water from NG agencies (DILG and DPWH) and ODA sources. However, its exposure to water is still limited. To date, MDFO handles 20 water-related projects amounting to P166 million, with an average loan size of only P8.3 million.

¹¹ Based on BSP data, the total resources of the Philippine banking system amount to P6.351 trillion. Thus, even if all water loans were absorbed by local financial institutions, they would amount to only a minute portion of the financial system's assets.

Estimating potential financial demand

Two important points must be considered when estimating the water sector's funding needs. First, there exists no comprehensive market survey of the funding needs of WSPs in the Philippines. LWUA does not conduct any regular survey of funding requirements of the water districts. The closest estimate of actual market demand for funding can be gleaned from a Japan Bank for International Cooperation (JBIC) conducted survey with 48 WD/LGU respondents in 2006. The 48 respondents have a total requirement of P9.25B between 2006 and 2011 (see Table 9). The World Bank estimated that P23.6B in new investments in infrastructure are needed to achieve the Millennium Development Goals. Though it uses simple assumptions, this figure does provide a general parameter of what could be required if the national government and utilities were to make a concerted effort to meet these goals. Second, WDs could take on significantly more debt if required to expand their systems to service all customers within their franchise areas. For example, LWUA estimated that 280 WDs could incur an additional P83.6B debt and still have a debt-service cover ratio of 1.2. This amount dwarfs LWUA's current capitalization of P4.4B.¹² The principal challenge, however, is translating potential demand into actual projects.

Key considerations for participation in water projects

Financing institutions should take into account the following key points as they consider lending to WSPs;

Regulatory considerations

- **Cost recovery and tariffs.** National government policy requires tariffs be set on a cost recovery basis, but different agencies use different methods for determining tariff rates. LWUA employs a cash flow methodology; NWRB sets rates using a Return on Rate Base of 12 percent; MWSS uses an Automatic Discount Rate through its contracts with its two concessionaires; and the Subic Bay Metropolitan Authority uses a Return on Equity method. LGUs follow no standard methodology when setting rates. Despite these many systematic approaches, political pressure still limits tariff increases—sometimes at the expense of a water utility's viability.

Table 9. Estimates of investment demand for water supply infrastructure

Institution	Estimated investment required (P billion)	Method of estimation
World Bank (2005) ¹³	23.60	This estimate is based on the calculation as to how much funding is required to meet the Millennium Development Goal target of 90 percent formal access to water supply from 2004-2009. It used simplistic assumptions such as P3,000 cost per capita to deliver level 3 water supply systems.
JBIC (2006) ¹⁴	9.25	This estimate is based on an actual survey of 93 "creditworthy" water districts and 33 LGUs rated A or B by LGUGC. Respondents were asked what projects they are planning for which they intend to secure loans between 2006 and 2016. Only 48 WDs and LGUs responded.
PWRF (2004)	145.00	This estimate is based on providing water supply and basic sanitation over the 2005-2015 investment period to half of the population who live in urban areas outside of Metro-Manila without access to piped water.

¹² Because of LWUA's limited capital, its expenditures for water district projects have been limited to around P1.352B since 2001. An example of the huge financing requirement of the sector is the Davao City Water District, the country's largest WD, which has a funding need of around P721M in the near term and P4.653B in the medium term.

¹³ World Bank: "Philippines: Meeting Infrastructure Challenges."

¹⁴ JBIC, Report on the Special Assistance for Projects Formation for the PWRF.

- **Ownership of water districts.** While LGUs can form water districts and the respective mayors can appoint the members of the WD's board of directors, ownership of the WD is unclear. Coupled with weak enforcement of performance standards, this has resulted in poor performance exhibited by many water districts, especially in terms of expanding systems to meet growing demand.
- **Non-exclusive franchises of water service providers.** In 2002, a Supreme Court decision (Box 3) declared the unconstitutionality of exclusive franchises for water districts. This decision opened the door to private sector involvement in the sector, and has raised concern among some water districts facing competition for delivering water in unserved areas within their service franchise.
- **LWUA's "step-in" rights.** LWUA possesses "step-in" rights under its charter that enable it to take over either the management, the board or both of a WD if it believes its loans are threatened by the utility's poor performance. An institutional arrangement with LWUA can be undertaken to simplify the procedure for working out any financial or operational restructuring or rehabilitation of WDs for and on behalf of the GFIs/PFIs.
- **LWUA's imposition of pre-termination fees.** LWUA charges pre-termination fees when existing loans are refinanced by GFIs or PFIs. Recently, LWUA has slowed approval of PFI/GFI refinancing schemes.
- **GOCC requirements.** Since WDs are classified as GOCCs, they must comply with various rules and regulations: Commission on Audit rules require WDs to use GFIs as depository banks; guidelines mandated by RA 9184 require WDs to follow national government procedures for procurement of goods and services and in infrastructure projects; WDs are governed by the Department of Budget and Management's limits on compensation of officers and directors based on size classification.

Water district considerations

- **Requirement for LWUA waiver.** WDs that have existing loans from LWUA must secure a waiver from LWUA before they can enter into any new loan agreement with a private or government bank, to ensure that all creditors are *pari passu* or on equal basis in terms of priority of repayments.
- **LWUA's right to review tariffs.** After undergoing public hearings, any proposed tariff changes by WDs shall be subject to a review by LWUA to ensure that these comply with conditions set by PD 198. Thus, any tariff increase required to service a new loan would automatically be subject to LWUA's approval.

Local government considerations

- **Deposit taking.** LGUs can use PFIs as depository banks only with the prior approval from the Bangko Sentral ng Pilipinas (BSP). BSP approval applies only to the specific branch, not the bank's entire branch network.

Box 3. Metropolitan Cebu Water District vs. Margarita Adala

On October 24, 2002 Margarita A. Adala filed an application with the NWRB for the issuance of a Certificate of Public Convenience to operate and maintain a waterworks system within sitios San Vicente, Fatima, and Sambag located in Bulacao, Pardo, Cebu City. The Metro Cebu Water District (MCWD) opposed the application on ground that the area to be served by Margarita A. Adala was within the MCWD's franchise area pursuant to PD 198 (as amended). On July 2, 2003 the NWRB granted Adala's application. MCWD appealed the case to the Regional Tribunal Court of Cebu which affirmed NWRB's decision. MCWD filed a petition for review on certiorari with the Supreme Court.

The Supreme Court ruled that "Section 47 of PD 198 which vests an 'exclusive franchise' upon public utilities is clearly repugnant to Article XIV, Section 5 of the 1973 Constitution. It is unconstitutional and may not therefore, be relied upon by petitioner in support of its opposition against respondent's application for Certificate of Public Convenience (CPC) and the subsequent grant thereof by the NWRB."

This ruling covers all water utilities since exclusivity of franchise is prohibited by the constitution. Thus, no public utility can have an exclusive franchise.

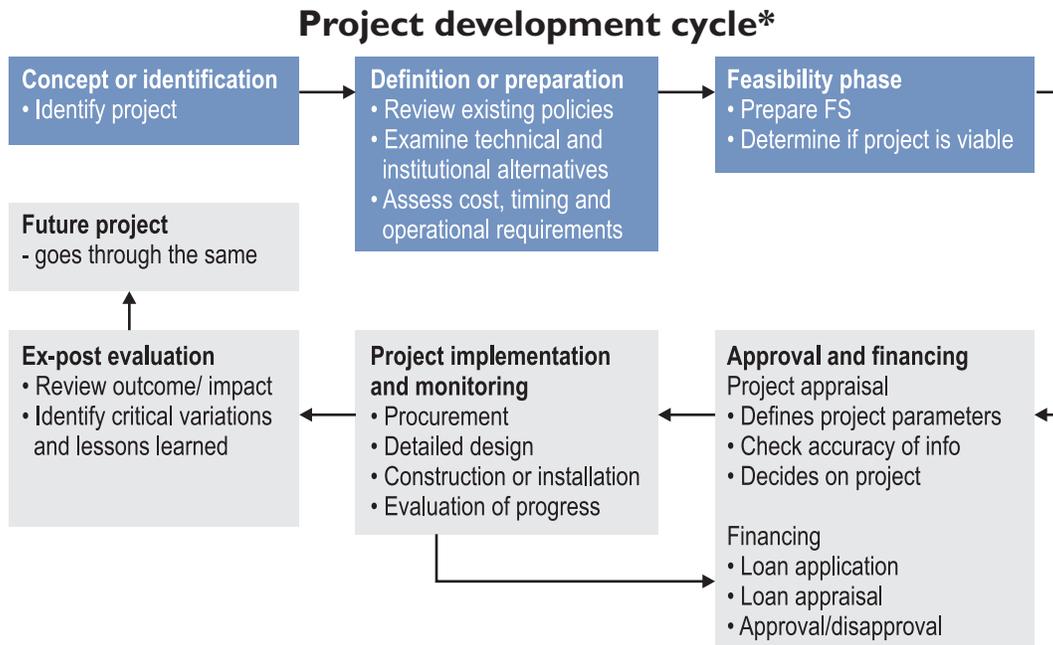
- **Borrowing capacity limits.** LGUs can borrow money or mobilize capital using bonds provided their total debt service obligations do not exceed 20 percent of their regular gross income.
- **Procurement requirements.** The rules and regulations mandated by RA 9184 also govern LGUs and their procurement of infrastructure, goods and services.

Technical appraisal of water projects

The appraisal of water projects represents a major challenge to creditors who are unfamiliar with the sector, especially its technical aspects (e.g., system design, hydrology risks, etc.). Maximizing LWUA's technical expertise and experience, DBP has an agreement with LWUA for the latter to review feasibility studies of water investment projects on a fee-for-service basis. A similar arrangement may also be beneficial to PFIs. LGUGC uses experts on a per project basis whose fees may or may not be charged to the borrower, depending on the size of the loan to be guaranteed and LGUGC's potential fees from the transaction. The expert's output is shared in full by LGUGC with the PFI that will fund the transaction.

II. DEVELOPING PROJECTS AND ASSESSING FEASIBILITY

Chapter 4. Project and feasibility study preparation



Project preparation

Financial institutions can use this information to understand the key elements to consider when carrying out rapid assessments of proposed water projects.

Needs/problem analysis and project identification

In developing a project, a utility will typically begin with a needs analysis (Box 4) and problem identification process. This also involves identifying possible solutions. Project identification can be done to address supply-demand gaps, expand systems, reduce non-revenue water (NRW), improve service quality, and/or improve WSP operating and financial performance. Though usually initiated by the WSP, projects may also be requested by client LGUs, customers or required by laws and regulations.¹⁵

Constraints can take the form of inadequate infrastructure, low efficiency, high water losses, water shortages, and lack of cash flow or capital. Once WSP planners and their consultants have identified problem areas, possible interventions should be developed. Note that various groups may identify different problems or define them differently, depending on their perspectives and priorities.

Box 4. Needs/problem analysis

Possible solutions for providing piped water services to a community 10 kilometers from the nearest WSP water lines could be:

- i) Contracting with a small scale water provider;
- ii) Setting up a local system managed by a community based organization or a cooperative assisted by an NGO;
- iii) Constructing a mini-distribution system managed by the WSP; and/or
- iv) The LGU funding and putting up its own system.

The bank must ensure the project has good potential for success based on documents submitted by the WSP. First, the bank must ensure the proposed project is included in the WSP's business plan or its capital expenditure budget, and that the submitted documents have been approved by the WSP's oversight organization (i.e., the WD's board). The following are examples of the types of projects proposed by WSPs:

* Source: NEDA, Reference Manual on Project Development and Evaluation

¹⁵ Such as the Clean Water Act or country development plans.

- **Comprehensive development.** This refers to water infrastructure projects designed to improve coverage. It commonly involves additional source facilities and infrastructure to individual household connections encompassing more than one barangay. A comparison between the actual coverage (population served) and the franchise population (total population) can help determine the need for the project. However, the method used for deriving population figures should be verified for reasonableness and consistency.
- **Facility improvement.** These projects strengthen, augment, or replace components of the supply chain (source-treatment-transmission-distribution-connections). For augmentation of supply sources, ensure that the percentage of non-revenue water is reasonable. Reducing NRW could be an alternative to expand water supplies. Check for water rights applications and approval. Surface water sources will require treatment facilities. Distribution reservoirs are needed in the demand center and reservoir capacity, as a rule of thumb, should be about 15–20 percent of maximum daytime demand.¹⁶
- **Expansion to a specific area.** This is similar to a comprehensive development project on a smaller scale, covering a single barangay or community. If the survey results of the proposed area are not available, a site visit or interview with community leaders—regarding current sources of water and how much people pay for water—can easily determine if there is a need for the project.
- **Asset management.** This type of project focuses on asset replacement to maintain asset serviceability and/or longevity. Most of these projects involve replacements in the distribution system (pipelines, reservoirs, hydrants, house connections, zones, and house meters). Checking on the NRW, looking at the average age of the pipeline or facility, and other verifiable asset conditions can confirm the need for the project.
- **Buildings.** This would include administration buildings, work shops, motor pools, training centers and the like. While these assets can serve as collateral, it would be prudent on the part of the bank to determine the actual purpose for such facilities. For example, some WDs have buildings that have no bearing on their service delivery. The WD could encounter strong criticism for this type of project, thus jeopardizing or delaying its completion.

Box 5. Possible approaches to solving a problem

Solving NRW starts by analyzing its causes. A project to reduce NRW by changing the pipelines could be caused by dilapidated pipelines but could also be because of theft, major leaks, worn out or uncalibrated production or service connection meters, or inaccurate production figures. Different causes have different solution sets. Even with complete financial justification, a project should be subjected to scrutiny if the sources of the NRW are not indicated or disclosed.

Elements of a feasibility study

Once the project has been identified, a WSP will assess the viability of the preferred option. A WSP borrower that requires debt financing for a major rehabilitation or system expansion should conduct several different analyses to complete its feasibility study, prepare the project, and estimate the funds required to carry it out. For efficiency improvement investments, (e.g., NRW reduction [Box 5], metering, small-scale distribution network expansion) a pre-feasibility study may suffice; for minor repairs and maintenance, a utility only needs a program of works.

A complete feasibility study should contain the following types of analyses, which are based on primary data sources and market surveys. These analyses provide the basis for the project appraisal.

- Demand and supply or market analysis
- Technical and engineering analysis
- Manpower and administrative support analysis
- Financial analysis
- Economic analysis
- Social soundness and impact analysis
- Institutional analysis
- Environmental impact analysis

A pre-feasibility study provides a rapid assessment of the above elements, and relies mostly on secondary data and assumptions based on rules of thumb. A program of works only describes the project scope and specific activities, and outlines cost calculations and estimated timeline.

Estimating costs

In preparing the project feasibility study, WSPs develop cost estimates for capital investments, operations, and maintenance. The WSP uses these cost estimates to compare options, estimate total project cost, establish financing requirements, and serve as basis for economic and financial evaluations.

¹⁶ Refer to Chapter 5 for maximum day demand discussion.

Box 6. Physical elements considered in developing cost estimates

1. For deep wells, estimate the depth and size of casing
2. For surface water, prepare a preliminary design for facilities for extracting water
3. Establish the treatment process and capacity of the treatment plant if required
4. Prepare a preliminary design of the treatment plant if no reliable cost reference is available for the type of technology
5. List all pipe requirements by size, length, and material
6. Define for each reservoir the type (ground or elevated), the preferred material (concrete or steel), and the storage capacity
7. Estimate the number of new service connections
8. Establish the pump requirements, the type of pump and the motor capacity
9. Define the general specifications and size of other major electro-mechanical requirements (e.g., transformers, back-up generators)

The level of detail required to develop accurate cost estimates varies. Completeness and accuracy depend on the type of study (whether master plan, pre-feasibility study or feasibility study), the resources and time available for the study, and the estimating tools and information available to those preparing the study.

A detailed feasibility study usually has a 20 percent margin of error. To achieve this level of accuracy, the design engineers must determine technical information as outlined in Box 6. Utilities usually prepare more detailed cost estimates only after the preparation of the detailed engineering drawings that contain all facility specifications.

In developing cost estimates, engineers refer to LWUA's "Water Supply Feasibility Study Methodology Manual" and "In-Place Costs of Waterworks Materials and Equipment,"¹⁷ material prices from the Construction Industry Authority of the Philippines, quotations from equipment and material suppliers, and their own cost databases. In general, most WSPs and water supply consultants have adopted methods for estimating costs that are consistent with relevant guidelines in LWUA's Feasibility Study Methodology Manual and the NEDA-Investment Coordinating Committee (ICC) guidelines.

The feasibility study provides an estimate of basic construction costs plus other related costs. Basic construction costs include all civil works and equipment to be constructed, installed and supplied under the project, based on prices for the present year. Other related costs include those for land, detailed engineering studies, and contingencies.

Basic construction costs

Many feasibility studies will price major items based on "in-place" or installed costs. These include the unit prices for capital expenditures and other inputs such as labor, excavation, pipe bedding, backfilling, pavement demolition, and restoration necessary to put the item in place. The contractor's profit may also be included in the unit price. Using reference "in-place" costs makes estimation easier since only the main item will be quantified.

The unit prices for "in-place" costs can be based on the LWUA's "In-Place Costs for Waterworks Materials and Equipment" which is updated regularly. Most water utilities and consultants also have their own database of in-place costs which are updated based on movements in the prices of materials, labor and use of construction equipment. Table 10 shows the in-place components of some items usually included in water supply feasibility studies.

¹⁷ Reference bid prices from some LWUA projects are also included in the document

Table 10. Components of “in-place” pricing

Item	Common unit of measure	Common inclusions
Deep wells (classified by casing size)	Depth	Well drilling and casing
Pipelines (classified further by pressure class, material type [e.g., steel, PVC, PE] and diameter)	Length in meters	Installation, excavation, pipe bedding, backfilling, pavement demolition and restoration, pipe installation, pressure testing, etc.
Pump equipment (classified by type [submersible, turbine pump, etc.] and pump driver [electric or diesel])	Set	Installation, discharge pipes, valves, and controls
Service connection (classified by diameter)	Set	Service meter, excavation, service pipe, and appurtenances
Reservoirs (classified by material [e.g., steel, concrete] and type [elevated or ground])	Volume (reservoir capacity)	Earthworks, foundation, pressure testing, and minor appurtenances
Flowmeters and valves (by type [gate valve, air release valves, hydrants, etc.] and size)	Set	Valve box, concrete base
Chlorinators (by type [gas or hypochlorinator] and capacity)	Set	Installation, valves, controls
Buildings (operation/administrative buildings, pumping stations)	Floor area in square meters	Earthworks, foundation, architectural works, finishing

Since available cost references rarely cover all materials and equipment, the cost engineer must also secure price quotations from local suppliers. The disadvantage of this practice is that suppliers usually quote the list price whereas water utilities and contractors, who buy in large quantities, can usually negotiate 30–40 percent discounts on listed prices for pipes and other materials. Ideally the cost engineer should reflect these discounts in their estimates.

Water treatment facilities pose a special challenge for cost estimation. The cost database only covers a limited range of equipment options because there are only a handful of water treatment facilities in the country, some of which are quite old. For water sourced from deep wells, utilities often use package-type treatment facilities (filters) which may be secured from different suppliers. Larger water treatment facilities, especially for surface water, may have numerous tanks and equipment which are sourced from different manufacturers. Furthermore, a major part of plant construction is civil works, carried out by a general contractor. Thus, cost estimates must include quotations from many suppliers and a general contractor. A good cost estimate can be done if a preliminary plant design is completed and costs for major items of work for the plant are estimated separately.

Estimates for minor items are usually made under a lump sum as these are minor additions to overall project cost.

Other items included in cost estimate

The following items are the typical components of basic construction costs:

- Land cost
- Physical contingencies. The rule of thumb is 10 percent of basic construction cost.
- Price contingencies. These are normally based on actual price movements in recent years and reflected as an escalation rate per year. Some cost estimators use a fixed percentage applied to basic construction cost, but the basis for this is not as clear as the escalation rate per year.
- Detailed engineering costs. These add up to 6 percent to the base construction cost. For larger projects, the cost estimator should lower the percentage value to come up with reasonable engineering cost estimates.
- Construction supervision costs. These can represent up to 10 percent of the basic construction cost. For larger projects, a lower percentage value should be applied to come up with reasonable construction supervision cost estimates.

Comparing project costs

There is little comparability between projects relative to additional supply of water or additional connections, since project costs vary greatly from one water supply project to another. What can be done is compare the different work items, such as deep wells, pipes, service connections and reservoirs. If there is a large variance, the bases for unit costs should be evaluated.

Estimating incremental operational and maintenance costs

Operational costs are generally broken down into labor, power and chemicals:

- Additional staff required to run the new facilities are defined (position and number).
- The chemical requirement for chlorine disinfection is based on a dosage rate per cubic meter of water produced and a unit cost for chlorine. The unit cost may be based on actual chemical operating cost for the water utility. For water treatment facilities requiring more than disinfection, engineers should present chemical requirements per cubic meter of water produced.
- Power requirement estimates are based on the power rating of major equipment. The cost estimator usually evaluates the number of hours a pump is operated to produce a certain volume of water, which is then multiplied by the power rating (in kilowatt) to come up with a unit power consumption per cubic meter of water produced (kwh/cubic meter).

Maintenance costs are usually estimated based on the capital cost of civil works/fixed assets and electromechanical equipment. For estimating annual maintenance costs, LWUA's Feasibility Study Manual uses 0.3 percent of capital cost of civil works and fixed assets, plus 3 percent of capital cost of electromechanical works.

Efficiency improvement program

An efficiency improvement program is a type of intervention that enhances the financial and operating performance of water service providers. It is intended to improve utility performance (operational and financial) and investor confidence, with a focus on achieving high-impact, quick returns using short-term investments. Utility managers and financing institutions can use the ratios described below to determine whether an efficiency improvement program is needed.

Improving operating (efficiency) ratios

- **Net income ratio.** This requires increasing operating revenues or water sales, and/or reducing operating expenses. Increasing operating revenues or water sales involves raising water production, expanding service area coverage, applying appropriate tariffs, and improving collection efficiency while reducing operating expenses. Reducing costs requires improving production (pumping) efficiencies, energy utilization by reducing NRW, and increasing the service connection to staff ratio (staff productivity).

- **Debt service ratio.** This requires increasing net income and reducing debt service obligations. Decreasing debt service after contracting a loan requires renegotiation of the loan interest rate and/or tenor.
- **Collection ratio.** Improving billing and collection systems can reduce customer arrears. This may require developing and implementing new billing systems and payment methods, establishing a system of rewards and penalties (including disconnection for overdue accounts and illegal connections) and an information and awareness program.
- **Staff ratio.** Increasing the number of active service connections per staff involves aligning staff positions with organization objectives, upgrading skills and qualifications through training, providing tools and equipment, paying competitive salaries and providing incentives to recruit and retain qualified personnel.

Approaches to improving operating efficiency and performance

The utility manager and oversight board can decide on the types of programs they need to improve utility operations and performance. The principal types of programs are generally among the following:

- **NRW reduction.** Reducing technical and commercial losses and converting non-revenue water into additional revenue can be done by: (1) improving capacity to monitor and account for water losses; (2) increasing accuracy in metering water production and consumption by repairing, calibrating and maintaining water meters; (3) immediately detecting and controlling leaks; (4) detecting illegal connections; and (5) implementing best practices in the installation, rehabilitation and maintenance of the supply networks.
- **Revenue enhancement program.** This entails increasing the number of service connections and improving billing and collection performance. Service connections can be expanded by instituting affordable connection fees, implementing appropriate tariff structures and levels, and providing reliable customer service. Effective billing, payment and enforcement systems, good customer relations and marketing strategies can help improve collections.

- **Cost reduction/control program.** This program aims to improve personnel productivity and control energy costs which are the largest operating expense components for most utilities. Staff productivity can be improved through training in a range of priority areas, holding awareness seminars for senior staff and decision makers, and upgrading equipment. Reducing/controlling operating cost involves: (1) monitoring/controlling cost of power for pumping through regularly conducted energy audits; (2) repair/replacement of energy inefficient pumps and motors; (3) proper production and demand matching of pumps; and (4) implementation of a preventive maintenance program.

Alternative analysis

Alternative analysis is the process of comparing different approaches to one objective. It uses a net present-worth approach to analyze both initial construction and longer-term operating costs as the basis for comparing different options. The following are the options that may be analyzed using this method:

Source alternatives. Normally source, transmission, and treatment are taken as a single scheme in these analyses since these facilities are closely linked. Transmission lines are designed to handle the maximum daily water demand of the system as this is also the minimum requirement for source capacity. To choose among sources, both sources and the required transmission lines should be considered together.

Reservoir location and volume alternatives. The ideal location for a reservoir is opposite the source—that is, the service area sandwiched between the source and the reservoir—as this will allow the source and reservoir to compensate each other in terms of water pressure in the service area. But this can still pose a problem when source capacity is overtaken by water demand, thus ending up with a reservoir that is not filled. The alternatives for storage locations are critical when high ground is available

within a reasonable distance from the service area. Since an elevated reservoir is more costly than a ground reservoir, it may be worth considering locating the reservoir on high ground rather than constructing an elevated one (of either steel or concrete) close to the service area. The options are (1) a less costly ground reservoir but with longer transmission and main distribution lines or (2) a costly elevated reservoir constructed close to or within the service area with shorter transmission and possibly main distribution lines. Only a detailed analysis and computation can determine the more advantageous scheme.

The volume of the reservoir is designed in tandem with the capacity of the source. One may consider having a low-capacity source with smaller-diameter transmission line and a larger reservoir or a higher-capacity source with larger-diameter transmission line and a smaller reservoir.

Pressure zone alternatives. In service areas where the topographies are undulating, it may be necessary to consider different pressure zones to meet minimum peak-hour pressure requirements. Alternatives may be to:

- locate the reservoir on a higher elevation but with higher pumping cost
- provide separate reservoirs for higher areas
- increase diameters of distribution lines to reduce head losses and enhance pressure in pipelines but shoulder higher cost of pipelines
- provide booster pumps for higher areas but with higher pumping cost

Actual trials are necessary to determine the most advantageous scheme in a particular service area.

Using the net present-worth analysis allows the utility to eliminate variability in terms of component lifetimes and construction periods (Table 11) when evaluating options for each major system. By using a common base year for comparing costs, the net present-worth approach provides an objective way to compare options.

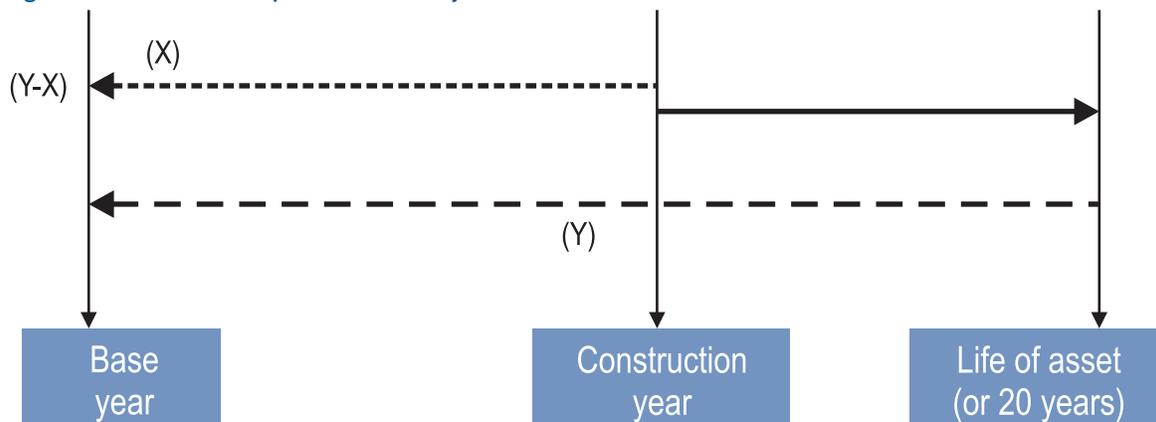
Table 11. Economic life of common water supply facilities

Facility	Economic life
Wells	30
Spring intakes	50
Pipelines	50
Storage reservoirs	50
Disinfection facilities (chlorinators)	15
Internal network	50
Fire hydrants	30
Electro-mechanical equipment	15
Valves	50
Water meters	15
Operational buildings	15

In developing this analysis, common items are canceled out in the process of comparison. For example, when comparing a spring source (which can supply the water system by gravity) and a well (which needs to be pumped), chlorination is eliminated as a relevant factor because water supply needs to be chlorinated in both schemes.

The process and formulas in Figure 5 show how this analysis is carried out. Utilities use the economic life of particular assets (Table 11), or assume a 20-year average period if several assets are included in a single project to establish salvage value.

Figure 5. Schematic for net present-value analysis



The present worth cost (C_c) of the facility is $C_c = C (1/ (1+i)^x)$.

The salvage value (C_s) is $C_s = C (1- (Y-X)/N) (1/ (1+i)^y)$.

The net present worth (C_n) is thus computed $C_n = C_c - C_s$.

Where:

- X is the number of years between the base year and the facility's construction year
- Y is the number of years between the base year and year 20
- Y-X uses the estimated life of the asset or 20-year average
- C_c is the present-worth cost of the facility or scheme
- C is the construction cost of the facility
- C_s is the present-worth cost of the salvage value of the equipment at design year
- Y is the number of years between the base year and year 20
- i is the discount rate adopted for the analysis which varies from 10 percent, 12 percent or 15 percent
- C_n is the net present worth comparable cost

The present-worth cost of the annual operation and maintenance cost (C_m) is likewise computed per facility or scheme using the formula $C_m = A_c (1/ (1+i)^n)$

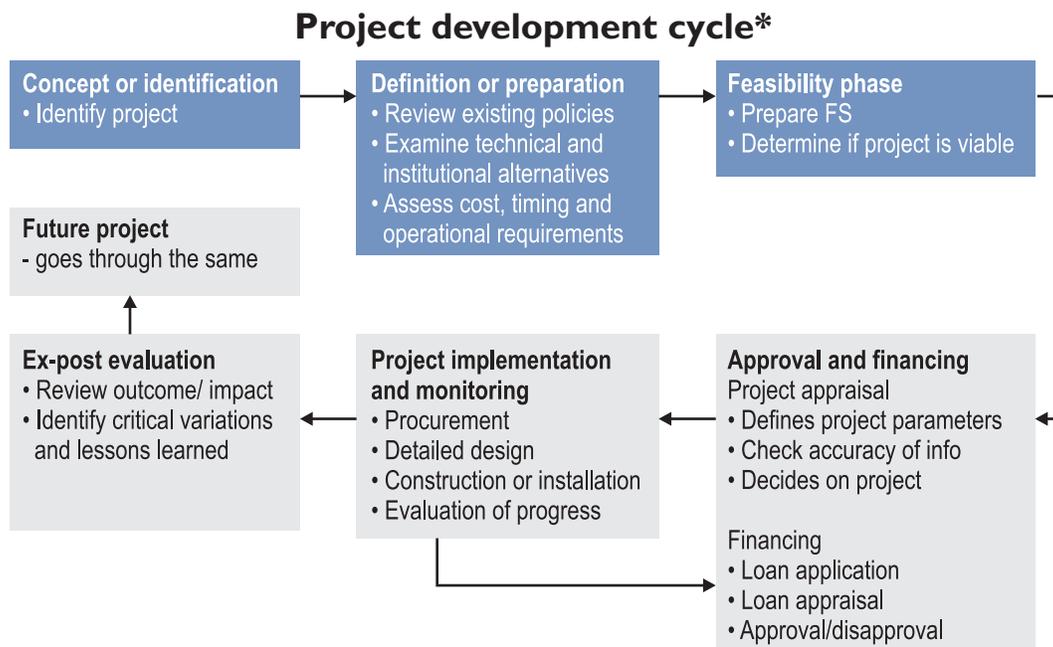
Where:

- C_m is the present-worth cost of the annual O&M at a particular year
- A_c is the annual O&M cost of the facility or scheme at a particular year
- n is the number of years from the base year to the particular year when the O&M cost is considered

The total present-worth cost of annual operation and maintenance (O&M) is added to net present-worth comparable cost of the facilities or schemes in a particular option. The recommended option is the one that provides the least cost. For options that do not involve staged implementation of facilities, a straightforward comparison of facility construction and O&M costs may suffice.

Sometimes, certain non-quantifiable parameters can overturn the choice of the most advantageous scheme. As a rule of thumb, when the difference between the least cost option and next lowest alternative is less than 10 percent, analysts will also consider non-quantifiable factors such as political ramifications, peace and order issues, complexity of operation, etc.

Chapter 5. Elements of water system development



As discussed in Chapter One, the national government classifies water systems into three levels. For purposes of this project appraisal guide, we focus only on Level III systems (systems that provide piped connections). This chapter takes up the elements of water system development and management, and the analyses needed to forecast market growth.

Demand analysis and forecasting

Projects are developed as a response to an anticipated or actual problem. Utilities require capital for new source development, the expansion of systems and/or major rehabilitation of existing infrastructure. Similarly, proposed projects are developed in response to actual or anticipated demand growth.

Projects with source development or non-revenue water reduction components will result in significant increases in water production or availability. When this happens (and unless the additional water will be used to expand to a 24/7 service), the WSP must increase service connections to absorb the additional volume of available water. Therefore, water demand projections are indispensable in a feasibility study.

If the additional volume goes over the projected growth in water consumption, it could adversely affect the project's financial viability because of lower-than-expected return on investment. To effectively quantify and project estimated demand for water, utilities must answer the following questions:

- What is the size of the potential market/demand?
- What is the size of the target market or niche market/demand?
- Where is the market/demand?
- What should be the price of water to customers?

Factors that drive water demand

Market surveys attempt to understand the factors that drive water demand. There are two major classifications of water demand: Domestic household demand and Commercial/industrial demand. Households usually comprise the bulk of water demand. For water utilities that also provide communal faucets, consumption from these communal faucets may be included in the domestic/household demand estimates. Commercial/industrial demand comes from business establishments and industrial firms in the service area. Water demand for government offices also falls under this classification.

* Source: NEDA, Reference Manual on Project Development and Evaluation

The common factors that drive water demand are:

- Unit consumption
- Population/urban growth rates
- Commercial/industrial development and growth rates

Many utilities collect data and develop consumption ratios for each demand category used to project demand growth. Table 12 provides some general planning parameters for estimating the maximum-day to average-day ratio.

Table 12. Maximum-day to average-day demand ratio

Population served	Ratio
Less than 30,000	1.3:1
30,000 to 200,000	1.25:1
More than 200,000	1.2:1

Figures 6 and 7 illustrate the difference between maximum daily demand, maximum hourly demand, and average daily demand.

Figure 6. Maximum day vs. average day demand

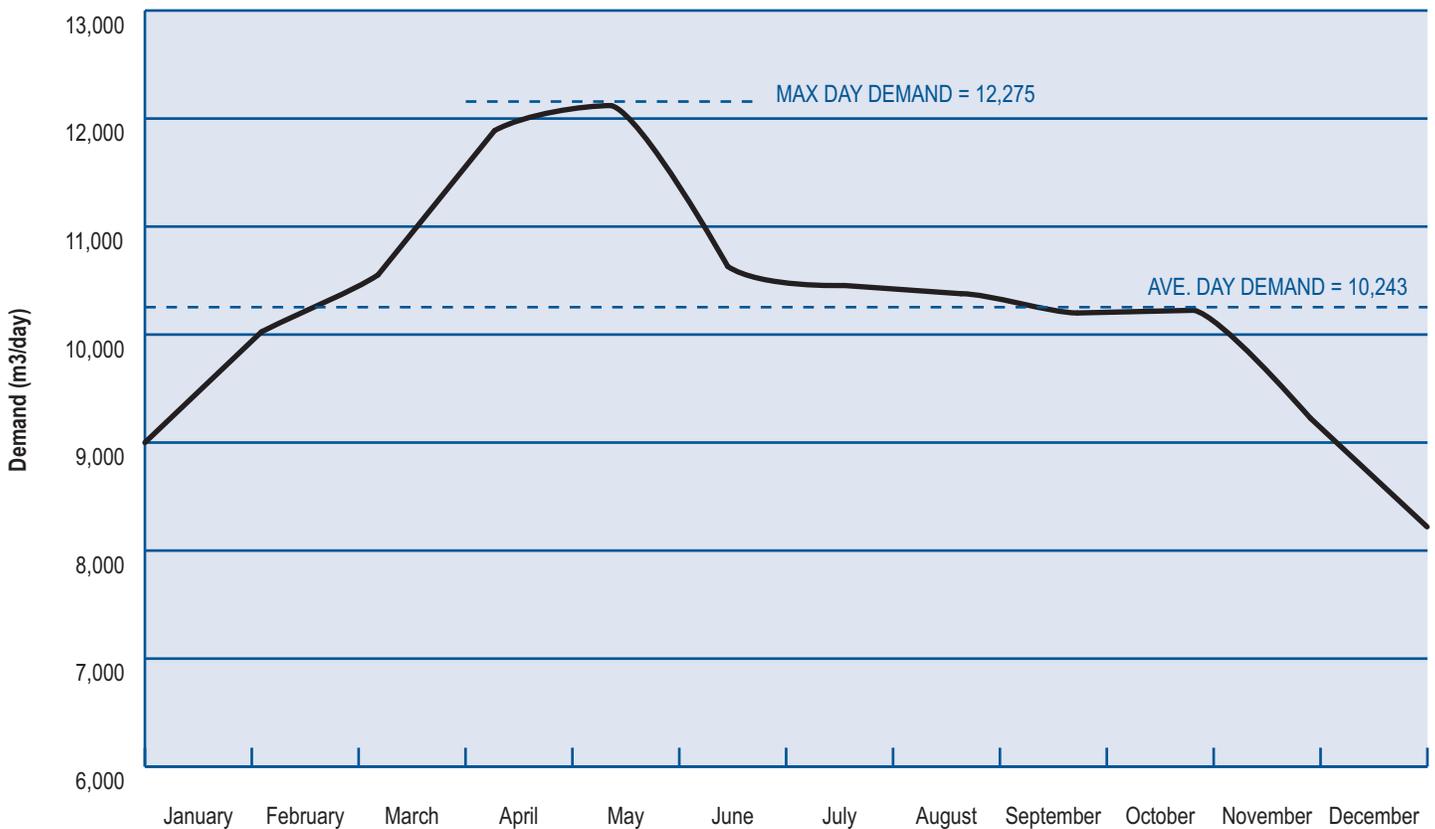
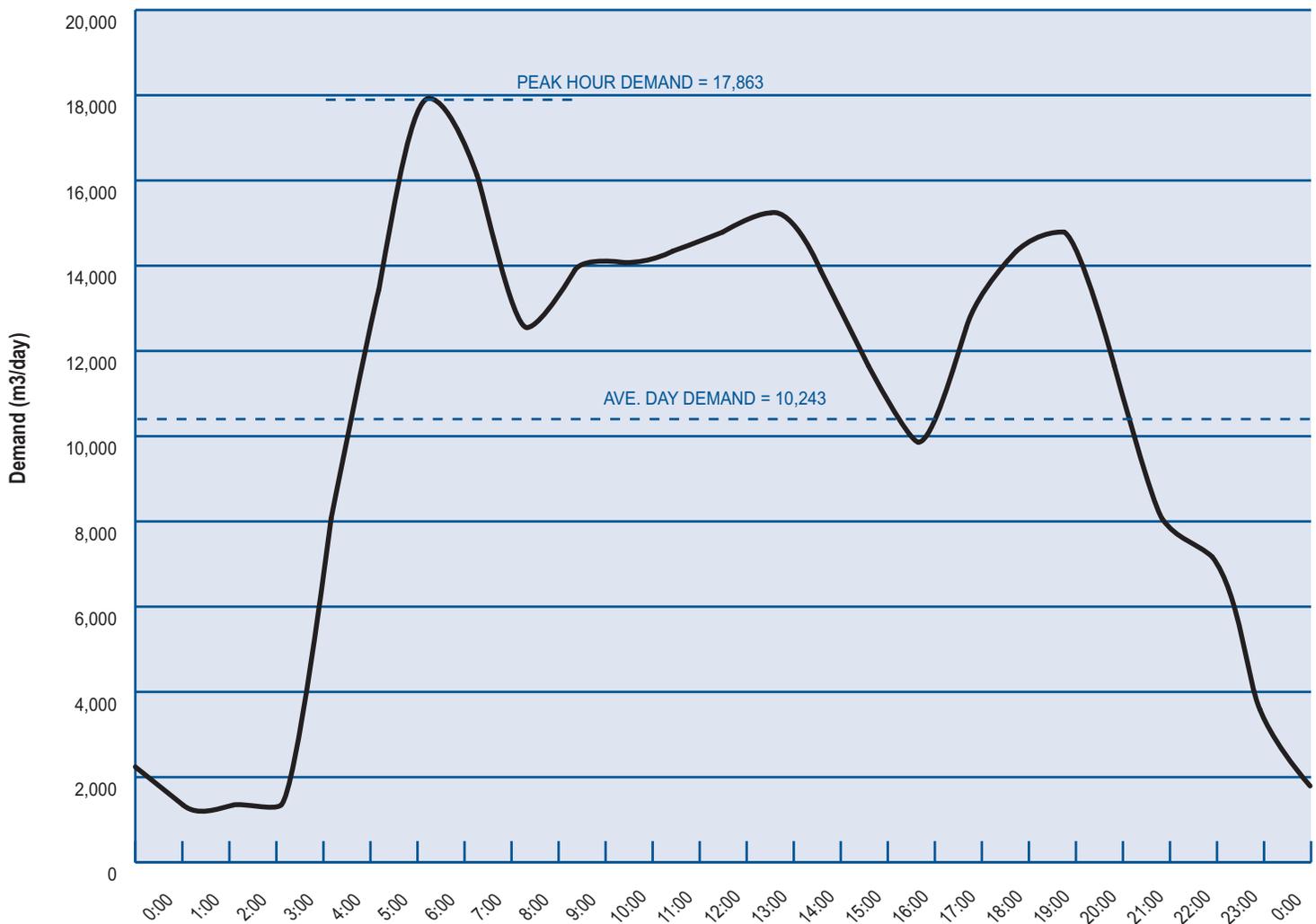


Figure 7. Peak hour demand and average day demand



Domestic / household potential demand

Developing good estimates of domestic/household demand requires the following information:

- Total household population of the water utility's service area, including population growth rate projections
- Degree of urbanization to estimate the urban population, including growth rate projections¹⁸
- Percentage of total urban household population already served by the water utility
- Identification of water sources for households and businesses not served by the WSP
- Distribution into regular and communal faucet consumers (based on household income classifications)
- Per capita "unsuppressed" and "suppressed" consumption per type of consumer
- Proportion of existing customers with suppressed demand

Commercial / industrial potential demand

For a proper estimation of commercial/industrial potential demand, the following information is needed:

- Total commercial and industrial area within the water utility's service area (hectares)
- Commercial and industrial development growth rates (percentage of area per year)
- Commercial and industrial "unsuppressed" water demand densities (cubic meter per day per hectare)
- Commercial and industrial water demand densities growth rate (percentage per year)
- Commercial and industrial water demand already served by the water utility
- Source, quality, and price of water for those commercial/ industrial enterprises that do not purchase water from the WSP

¹⁸ The urban areas are considered as the water utility's available market areas owing to the potentially higher financial and economic returns on investments that may be generated compared to rural areas

Population and commercial/industrial growth projections

Projections of population or commercial/ industrial growth can provide a basis for estimating future demand, but some trends are difficult to project too far into the future. To measure the feasibility of a specific project, using a range of possible outcomes rather than any single projection is recommended.

For estimating population growth, NSO statistics provide the best guide. Commercial/industrial projections depend on national and/or local government plans/policies, laws and regulations that affect the business sector. Some projections of population or commercial/industrial growth are simply the continuation of historical trends. These may be considered reasonable assumptions for short- to medium-term projections over which socio-political, legal and economic conditions are expected to be stable.

Unit water demand

The water volume consumption per day of a customer is known as the “unit water demand.” The unit water demand for domestic/household consumers is usually expressed in terms of liters per capita per day (lpcd). In the case of commercial/industrial consumers, this would normally be expressed as cubic meters per hectare per day or cubic meters per day per connection. The actual unit water demand for different types of consumers may be obtained by referring to the water utility’s customer billing records.

For example, the average consumption per regular household customer is 30.3 cubic meters per month. If there is an average of 5.1 persons per regular household served, the average unit water demand can be computed as follows:

$$\frac{(30.3 \text{ cu. m. per month}) \times (1000 \text{ liters per cu. m.})}{(30 \text{ days per month}) \times (5.1 \text{ persons per household})} = 198 \text{ lpcd}$$

In some water utilities, there are areas with discontinuous water supply and low water pressure. In these areas, the actual per capita consumption is considered “suppressed.” That is, consumption could be greater if the system could provide continuous supply or better pressure.

For example, if actual per capita consumption in areas with discontinuous water supply is 168 lpcd and actual per capita consumption in areas with continuous supply/pressure is 198 lpcd, then the ratio of suppressed to unsuppressed consumption is:

$$\left[\frac{198 - 168}{198} \right] \times 100 = 15\%$$

Therefore, the level of suppression is 15 percent.

Target / niche demand

The water requirements of existing water utility customers plus a percentage of those without service who are willing to connect to the water utility make up niche demand. Determining target or niche demand is very important as, in some situations, the potential market will not automatically apply for a connection even if water service is already available. Some factors that limit demand for connections include:

- Availability of water from competing water service providers
- Preference for continuing to utilize their own source of water (e.g., private wells)
- Cost of applying for and maintaining a connection from the water utility

To estimate niche demand, it would help to know the percentage of potential customers who plan to secure water from another source and, among these, the percentage who specified the water utility as the other source.

Location of niche demand

WSPs should prioritize the installation or marketing of new service connections in niche demand areas. A market survey can provide information on the location of these areas, particularly where respondents have expressed willingness to avail of the water utility’s services as another source of water supply.

Water utility records can also point to areas where the utility has suspended applications for service connections due to insufficient water supply and/or low pressure or non-existence of distribution lines. Areas where major commercial, industrial or housing developments are located and which are without their own source of water supply are likely to rely on the water utility.

Water pricing and its impact on demand

Proper pricing of water supply to consumers allows the utility to recover costs and accumulate capital it can use to expand systems. It also enables the utility to manage demand, especially in areas where the utility must promote water conservation.

Market surveys can provide information on the water pricing perceptions and expectations of existing and potential customers. A survey can include questions to help the utility understand how customers will react to price increases and anticipate customer resistance and curtailed consumption.

Non-revenue water

Non-revenue water is the difference between the total volume of water produced by the water utility and the total volume of water sold or billed to its customers. NRW consists of water lost through leaks in transmission and distribution systems, unbilled water consumed through theft or meter errors, and unbilled but authorized consumption (i.e., fire hydrants). The percentage of NRW is computed as follows:

$$\% \text{ NRW} = (1 - (\text{Vol. of water sold} / \text{vol. of water produced})) \times 100$$

It is important to understand the level of NRW when a utility proposes a new capital investment project. For example, if a water utility has an NRW rate of 30 percent and requires an additional 70,000 cubic meters per day to meet expected demand growth, it must produce at least an additional 100,000 cubic meters per day to meet this expected growth. NRW is a good indicator of how well a utility is managed and the age of its infrastructure. Well-run utilities have no more than 25 percent NRW. If a utility doesn't have actual data on NRW, it can use the assumptions shown in Table 13.

Table 13: Assumptions in calculating NRW without actual data

Water system condition	NRW as percentage of production
System with old and new pipelines	40
System with new pipelines	20-25

Developing water sources

Water utilities secure water from various sources, most commonly from groundwater through wells, which characterizes 86 percent of existing water supply systems. Other water sources include groundwater springs and surface water from rivers, lakes and the sea. Most WSPs tap groundwater because of its proximity to the demand center and its lower treatment costs. Surface water, in contrast, requires considerable treatment that results in higher investments in infrastructure (i.e., intake structures, sedimentation basins and filtration facilities) and higher operating and maintenance costs (chemicals, filter media, manpower, civil works maintenance, etc).

Evaluating proposed water source development facilities

Water supply sources must be able to meet the maximum daily water demand of the service area as well as conform to quality standards set by the PNSDW. The following factors are used in evaluating water sources and facilities:

- Quantity of water required
- Quality of raw water and treatment requirement
- Distance to service area
- Difference in elevation between source and demand centers
- Accessibility and potential difficulties in construction
- Operator safety
- Possible future contamination of the water source
- Ease of expansion for future requirements

Water utilities prefer gravity-fed water systems because they cost less to operate. However, overall operating costs of such systems may still rise when transmission and treatment costs are factored in.

In general, the first step in evaluating a water source is determining minimum flow. The minimum design flow for water source facilities should be able to satisfy maximum daily demand (based on the highest water demand for an extended period, i.e., one year). A source may be developed individually or in combination with other sources, depending on estimated water demand. Combined use of surface and groundwater may be beneficial not only in meeting water demand but in conserving water. During periods of high precipitation, surface water can be used to allow groundwater to swell; groundwater may be used to supplement supply during periods of low surface flow.

The choice of whether to use surface or groundwater depends on the quantity of water that can be developed. Table 14 presents the advantages and disadvantages of developing surface and groundwater, which need to be accounted for in evaluating water source options.

Table 14: Pros and cons of surface and groundwater development

Surface water	Groundwater
Advantages	
<ol style="list-style-type: none"> 1. Water may be available by gravity flow 2. Substantial flow 3. Can be developed for other uses (e.g., power) 4. Where water quality is excellent, minimal maintenance is required for facilities 5. Recharge depends on precipitation 	<ol style="list-style-type: none"> 1. Minimal treatment may be necessary 2. More protected from contaminants 3. Requires minimal land area 4. Discharge can be relatively constant 5. Easy to construct 6. Usually available from point near demand
Disadvantages	
<ol style="list-style-type: none"> 1. Requires complete treatment 2. Easily contaminated 3. Needs considerable area for treatment 4. Fluctuating discharge 5. Construction is not simple 6. Requires conveyance to service area 	<ol style="list-style-type: none"> 1. Requires pumping 2. Limited flow 3. Cannot be developed for multiple use 4. Maintenance of well and pumps is expensive 5. Recharge is difficult to manage

Water utilities should routinely consider other factors when evaluating sources, including required treatment and transmission distance, and formulate and analyze alternative schemes to determine the best option. Utilities should also analyze source capacity and required storage volume to design the least cost scheme.

Source capacity is dependent on the system storage capacity and period of operations: for spring and surface water that can be fed into the system by gravity, operation is 24 hours so source capacity should at least be equal to the average hourly demand. For wells that will be operated less than 24 hours per day, the actual discharge must be higher than the average demand by a factor 24/operating hours to supply the required daily production. For example, if a well will be operated for only 18 hours a day, the well discharge must be at least 24 hours/18 hours or 1.33 times the average hourly demand.

Water utilities may also be required to assess the environmental impact of developing a surface water source, especially if withdrawals could impact the downstream ecological requirements of the water source. Finally, utilities should conduct baseline water quality analyses to enable tracking of changes in water quality over time and season as maintaining water quality is essential to ensure the source remains potable.

Surface water development

Surface waters are more susceptible to contamination than groundwater. The chemical characteristic of surface runoff is dependent on the accumulation of pollutants picked up in water as it runs across the landscape. Common surface water contaminants include nutrients, pathogenic organisms, suspended solids, salts, toxic metals and toxic organic compounds.

Pathogens found in water include bacteria, viruses, and protozoa excreted by diseased animals and persons. When present in surface waters, these render the water non-potable and unsuitable for swimming and fishing. Locally, drinking water is usually tested for coliform bacteria (i.e., E. coli). The presence of these bacteria does not necessarily mean the water is dangerous, but does raise concerns for a water utility. In addition, water is usually tested for toxic chemicals and heavy metals such as lead, arsenic, chromium and mercury, pesticides and herbicides, polyaromatic hydrocarbons (PAH), polychlorinated biphenyl (PCB), and BTEX (benzene, toluene, ethylene, xylene).

Aside from water quality, another factor considered in evaluating a surface water source is its “safe yield,” or the amount of water that can be withdrawn without damaging the source. Safe yield is the maximum amount of water that may be withdrawn under registrations and permits. In allocating water, the NWRB considers safe yield to be up to 80 percent base flow of the water body. The base flow is calculated by analyzing the flow of the water body over the course of the year. Setting safe yield at this level allows sufficient water to remain in the system to preserve the resource and its surrounding habitat.

Flood and drought pose the main risks for surface water. Floods can destroy intake structures and put considerable sediment into the systems, and droughts affect the amount of water supply. Hence, in the hydrologic study of a specific water supply, the water utility must assess the probability of drought and floods and factor this analysis into their infrastructure planning, as well as establish the firm or minimum yield of a surface water source.

Raw water intake

There are two main types of surface water intake: open or free-level intake, and controlled level intake. An open or free-level intake operates in all water flow conditions. This system is simple and relatively cheap, but usually requires constant water supply that does not fluctuate excessively. A controlled level intake has a diversion structure (e.g., weir) set up downstream for the purpose of maintaining water levels throughout a range of flow conditions. Though more expensive, it is more reliable and provides constant supply.

The intake structure should satisfy both engineering and regulatory water quality requirements. Utility engineers take the following issues into consideration when designing a raw water intake:

- Flow regime of the source, daily and seasonal minimum discharge, flood occurrence, and the level of the water source (river, stream, etc.) in relation to water supply structures
- Depth from which water may be taken (surface, lower levels, or the full depth of the water supply source)
- Intake should be located upstream of the service area to avoid contamination by sewage discharge or along the outer periphery of a river bend (where there is the least sediment deposit) and should be protected from any damage caused by heavy floating objects during floods
- Maximum flood level and minimum dry season water level (the intake must be below the minimum water level)
- Intake must be equipped with bar screen and strainer

In cases where pumping is necessary, the motors (except for submersibles) should be installed above maximum flood level. All equipment should be readily accessible for maintenance and repair at all water conditions. It must be possible to raise the equipment above water level, carry out repairs, and lower it back into position.

Impounding reservoir

Water supply reservoirs store water during high river flows for use during low flows. Utilities should construct impounding reservoirs if the safe yield of the source is less than estimated demand. After determining water demand, the traditional analysis for an impounding reservoir is to determine the yield during the critical period—usually the

driest period in the historical record or from synthesized flow—after which the storage area and capacity are analyzed. This is accomplished by using topographic maps to determine area and volume elevation relationships within the specific site. Other considerations are usable storage (i.e., available storage less the volume required to store sediments that accumulate during the life of the reservoir) and evaporation.

There are two types of impounding reservoirs: short-term and long-term reservoirs. A short-term reservoir is designed to meet seasonal supply variation, while a long-term reservoir is intended to meet demand during two or more years of drought.

Groundwater development

Groundwater volume, availability and flow are determined by the characteristics of underlying soil and rock. The more porous and permeable the formation, the easier water can flow through the soil. Groundwater is replenished by rainfall; it will be depleted if the replenishment rate is less than the rate of withdrawal. This can lead to damaging or harmful consequences such as a change in groundwater flow direction, reduction of aquifer storage capacity, ground subsidence, reduction of stream flow, lowering of water level in nearby wells, and change in water quality (e.g., intrusion of brackish or salty water, particularly in coastal areas).

As a rule, groundwater is purified as water passes through the soil. However, this is a function of soil type and thickness, concentration of pollutants, and depth of water table. Although groundwater may be considered purified, soluble salts (particularly of calcium, magnesium, sodium, bicarbonate, sulfate and chloride) are present in the rocks through which groundwater flows. Minerals in the soil and rock, like arsenic, can sometimes render groundwater non-potable or, in the case of sulfur and iron, give it a bad taste. Most groundwater pollution comes from human activity such as discharge from septic tanks, nitrates and toxic organic compounds from agricultural and industrial waste, and heavy metals and acids from mining operations.

The amount of groundwater a utility can safely extract is measured through pumping tests. Water utilities measure drops in the water table and often take other measurements during these tests, such as spring and stream flows and groundwater chemistry. Groundwater safe yield is that level where a long-term balance is attained and maintained between the annual amount of groundwater withdrawn and the annual amount of recharge.

Spacing pumps too closely in an aquifer can pose a serious problem. To avoid this, the Water Code of the Philippines specifies minimum well spacing to prevent interference (Table 15).

Table 15. Minimum distance between wells

Rate of withdrawal (lps)	Minimum distance between wells (m)
2-10	200
More than 10-20	400
More than 20-40	600
More than 40	1000

A well may be either shallow or deep. Shallow wells are less than 30 meters deep; deep wells are more than 30 meters in depth. For municipal water supplies, a deep well is preferred. Well development involves drilling a borehole, installing casings and screens (or slotted pipes), placement of gravel pack or filter, development of the well, conducting a pumping test, and cleaning and disinfection. The well head should be protected from surface runoff for possible contamination. Typically, public wells are sealed from the surface to a depth of at least 15 meters. Well construction is normally carried out by contractors specializing in this type of service.

Deep wells are usually found through sub-surface investigation or a geo-resistivity survey. A well is designed based on data gathered during drilling, such as penetration rate, soil samples and water table levels. Good design means an optimum combination of performance, long service life, and reasonable cost.

A well consists mainly of two elements: the cased section and the screened section. The casing serves as housing for pumping equipment and a vertical conduit through which the water flows upward from the aquifer to where it enters the pump. The well screen is the intake portion; its requires careful consideration of the hydraulic factors that influence well performance.

In addition to the actual well, water utilities should also install pump stations. A typical pump station houses control facilities, disinfection facilities, and a stand-by power source. A smaller facility may be designed to accommodate the control and disinfection facilities. Utilities should also design electrical facilities for the pumps and other equipment.

Spring development

A spring must have year-round water flow of at least one liter per second to be considered for development. Proximity to the service area is also an advantage. Several design factors are involved when assessing springs:

- Bacteriological contamination from the ground surface and/or livestock accessing the area around the spring
- Elevation with respect to the service area
- Flow rate and the amount of water required

The resource should be protected against any kind of pollution carried by surface runoff. Water utilities could cover the spring intakes to prevent contamination and decrease evaporation, and they could also fence the area and provide proper drainage.

Water treatment

Utilities treat water to ensure its safety for human consumption and to meet quality standards set by the PNSDW. Based on the water source, type and amount of contaminants, land availability, and capital and operating costs, utilities select the appropriate treatment technologies to be used. A combination of technologies is sometimes used to achieve effective and cost-efficient treatment.

Utilities employ a wide and diverse range of water treatment technologies to make their water safe for human consumption. Generally, surface water undergo a complete water treatment process, including sedimentation, coagulation and flocculation, filtration, and disinfection using chlorine, ozone or ultra-violet light. Water from ground sources (wells and springs) typically only need disinfection, though more treatment is applied in cases where high levels of iron and other minerals occur in ground water.

National drinking water standards as treatment objectives

The PNSDW prescribes values for bacteriological, physical and chemical makeup of safe and potable water. These standards are adopted by various water purification technologies in use in the country. Whatever processes are employed by a water, the treated water must pass all prescribed standards prior to distribution and consumption.

- **Physical parameters.** Turbidity, color and suspended solids are the most common physical parameters addressed by the treatment process.
- **Biological parameters.** The common biological parameters include bacteria, viruses and algae. All of these are present in water supply sources but the amounts depend on conditions of the surrounding environment. Water sources in areas with urban populations and commercial activities may be highly polluted, carrying large quantities of bacteria and viruses, while most upstream rivers in sparsely populated areas are relatively uncontaminated. All

water treatment plants must have provisions to eliminate these harmful microorganisms prior to distribution.

- **Chemical parameters.** Chemical parameters include pH levels, hardness, dissolved solids, ions such as sulfates, sulfides, nitrates, chlorides, and metals such as iron and manganese. The presence of some of these elements in unusually high concentrations imparts objectionable colors, taste and odor to water. Some are toxic to humans at elevated concentrations. Of particular interest for groundwater sources is hardness caused by calcium and magnesium ions. Hardness makes more soap necessary for washing and causes scaling in facilities which operate at high temperatures such as boilers, water heaters, and pipes. Chlorides, on the other hand, are commonly found in water sources near coastal areas.

Water treatment plant (WTP) technology options

Conventional water treatment. Conventional surface water treatment plants have a standard sequence of treatments. After screening out large objects such as twigs and branches, and aeration to remove iron and manganese, utilities will add coagulant chemicals (usually alum) to the water to allow fine suspended particles to flocculate into larger particles (flocculation), and settle during the sedimentation basin. This sedimentation process will remove most of the suspended and flocculated solids.

The clarified water is then passed through a filter bed to further remove remaining solids. Disinfection is the final step to destroy pathogens such as giardia, cryptosporidium, bacteria, and viruses through the addition of chemicals such as chlorine and ozone, or through exposure to ultraviolet light. In some cases, utilities will add other chemicals after disinfection to adjust the pH level, reduce hardness (water softening), prevent corrosion of the distribution system, or to prevent tooth decay in the case of fluoride. Activated carbon may also be used as post treatment to remove inorganic or organic contaminants that often impart residual color and rusty or algal taste in the treated water. Groundwater sources generally have higher quality and require less treatment than surface water sources. Utilities will routinely just filter groundwater followed by disinfection. (See Table 16 for comparison of water treatment technologies and Table 17 for water treatment process selection.)

Membrane water treatment. Membrane water treatment systems are the latest water treatment innovations originally used only in desalination projects (converting seawater to drinking water). In recent years, new membranes have been developed that remove microorganisms, particulates, and even dissolved organic and inorganic content in raw water. Membranes are thin sheets of composite plastic material that can separate contaminants from raw water based on size and electrical charge of the contaminants. These membranes allow



the water to pass through while screening particles, microorganisms and other contaminants.

Membrane treatment systems (microfiltration, ultrafiltration, nano-filtration and reverse osmosis) are pressure-driven and vary depending upon pore size. For example, microfiltration removes sand, silt, clay, algae, bacteria, giardia, and cryptosporidium; ultra-filtration removes viruses as well as some heavy metals; nano-filtration nearly completely removes all viruses and organic contaminants and reduces water hardness; and reverse osmosis systems remove virtually all organic and inorganic contaminants, particularly chlorides. Water treatment systems using reverse osmosis produce 50–65 percent reject water. This means that out of the 100 m³/day of raw water supplied across the membrane system, only

about 35 to 50 m³/day of treated water is produced while the rest are discharged as waste. For ultra-filtration or micro-filtration, the reject water is around 5–10 percent.

Other treatment systems

- **Distillation and solar treatment.** Distillation offers an alternative viable water treatment process when excess energy is available. However, the cost can be prohibitive if an independent source of power is employed.
- **Ion exchangers.** Ion exchangers use resins that remove charged inorganic contaminants like hardness, arsenic and nitrate. Activated carbon is used when temporary quality problems arise, such as residual color, tastes and odor. Activated carbon is generally preferred for removing organic contaminants.

Table 16. Comparing major water treatment technologies

Treatment	Advantages	Disadvantages
Conventional surface water treatment	Reliable treatment process with wide process references	<ul style="list-style-type: none"> • Requires chemicals • Relatively larger footprint required • Susceptible to solids carry-over
Membrane treatment technologies	Very reliable process with high efficiency in removing most water contaminants	<ul style="list-style-type: none"> • Higher capital cost per unit volume of water treated • Relatively higher operational cost
Distillation	Reliable treatment process when excess energy is available	<ul style="list-style-type: none"> • Very energy intensive

Table 17. Water treatment process selection

Source of water	Priority parameters	Treatment options
A. Surface water (rivers, creeks, lakes)		
Class AA* surface water	Suspended solids, coliform	<ul style="list-style-type: none"> • Disinfection • Filtration and disinfection
Class A* or slightly polluted / silted water	Turbidity, organics, coliform	<ul style="list-style-type: none"> • Conventional surface water treatment
Brackish or estuarine surface water with TDS > 500 mg/l limit	Turbidity, dissolved solids, chlorides, silica, boron	<ul style="list-style-type: none"> • Conventional surface water treatment and reverse osmosis • Membrane process*** using reverse osmosis
B. Ground or spring water		
Low TDS** (< 500 ppm)	Turbidity, hardness, iron and manganese, trace organics	<ul style="list-style-type: none"> • Aeration then disinfection • Aeration, filtration (or membrane) and disinfection
High TDS (>500 ppm)	TDS, sulfates, hardness, iron, manganese, trace organics, silica	<ul style="list-style-type: none"> • Aeration then reverse osmosis • Water softening with membrane process as post treatment
C. Saline Water (sea, ocean)		
Low turbidity	TDS, chlorides, boron, silica	<ul style="list-style-type: none"> • Distillation • Membrane process using reverse osmosis
High turbidity	Turbidity, TDS, chloride, boron, silica	<ul style="list-style-type: none"> • Distillation • Membrane process (with pre-treatment for solids)
D. Reclaimed water / recycled water		
Sewage treatment plant effluents for recycling	TDS, coliform, trace organics	<ul style="list-style-type: none"> • Membrane process with pre-treatment

* Refer to DENR AO 34. ** Total dissolved solids. *** Using membrane filters such as MF, UF, NF then RO.

Water transmission and distribution

Aside from the water source and treatment facility, most water systems have three other principal components: transmission, storage, and distribution infrastructure. Water utilities design systems to provide a sufficient volume of water within a specified pressure range to serve customer needs. In areas where the topography is undulating and where there is more than one pressure zone, utilities should establish different pressure zones using different values to maintain pressure within the system. General standards include maintaining minimum peak-hour pressures of 7m and 14m in residential and commercial areas, respectively.

Transmission/ storage systems

Transmission and storage systems consist of transmission mains and storage reservoirs. The transmission pipeline transmits water supply from the source to either the reservoir or directly to the demand center. Storage reservoirs allow for the storage and release of water during the day to meet fluctuating demand.

Transmission mains. Transmission mains connect a distant water source to the balancing storage tank. Water utilities design transmission pipelines to carry the system's maximum day demand. In exceptional cases, such as when the source is capable of supplying peak hour demand or is located on flat terrain and not far from the center of demand, transmission facilities may carry peak hour flow. In pumped water systems utilities will choose the most economical pipe size based on the pipe's energy and construction cost.

Storage reservoirs. Ideally, a water utility's reservoir should have enough capacity for operational, emergency, and fire-fighting requirements, depending on the viability of the water supply project and the water supply rate.

- **Operational storage.** This refers to the volume of water consumed at peak-hour demand. Water stored for peak operation makes up about 15–30 percent of

maximum daily demand, depending on the capacity of the source. The greater the source capacity, the lower the volume of operational storage required.

- **Fire-fighting storage.** This is a water reserve intended to be used to combat fire. Utilities will generally reserve at least 120 cubic meters of space for fire-fighting storage. This is considered sufficient because fires seldom occur simultaneously with peak hour demand. In addition, utilities can also manipulate system valves to ensure that water is available for filling up fire trucks. Fire flow requirements specify a water flow rate of 22 L/s from each of the two adjacent fire hydrants in residential areas.
- **Emergency storage.** This is a reserve intended for use in other emergencies, such as facility breakdowns, power outages, calamities, etc. In the Philippines, water utilities set aside two hours of maximum day demand for emergency purposes.

Storage reservoirs may be elevated or at ground level depending on what is more economical in terms of construction cost and overall plan. Reservoirs are classified depending on construction materials (concrete, steel, earth, wooden, etc), elevation (elevated or ground level), function/purpose (operational, fire, emergency), and operation (fill-and-draw or floating).

Ground reservoirs are generally made of reinforced concrete and cost less to construct than elevated towers. They also entail lower maintenance costs and are less susceptible to corrosion and possible damage from earthquakes. When designed to have two chambers, ground reservoirs are effective in minimizing water service interruptions during maintenance works.

Elevated reservoirs are mostly cast-in-place reinforced-concrete or fabricated from welded or bolted steel plate. Elevated reservoirs cost more to build, but they can be located close to the source or the service area, thus eliminating the need for long transmission lines.



Booster pumping stations. In some service areas where topography does not permit the economical location of storage at a desirable hydraulic elevation, a combination of ground storage with booster station and elevated storage may be the best solution. The economy of pumped storage must be weighed against the dependability of having more readily available water from an elevated reservoir.

Distribution systems

Distribution pipes carry water from the balancing storage reservoirs and/or the transmission mains to consumer service connections and fire hydrants. Distribution pipes are designed based on peak hour demand. Distribution systems have the following principal components:

- **Distribution pipelines.** Distribution pipelines start from the reservoir down to the service connections, distributing water to individual consumers. Designs for new pipelines must factor in possible pressure losses and ensuring adequate pressure during peak-hour and fire flow conditions.
- **Valves.** Valves allow water service providers to isolate or regulate water flows within the water supply system when carrying out maintenance works, responding to emergencies or controlling supply and pressure. Valves are spaced to minimize disruptions during maintenance on the system. High-demand areas have more closely-spaced valves.
- **Meters.** Many systems have three types of meters: production, district and service connection meters. Production meters measure the volume of water that enters the system from the source or treatment

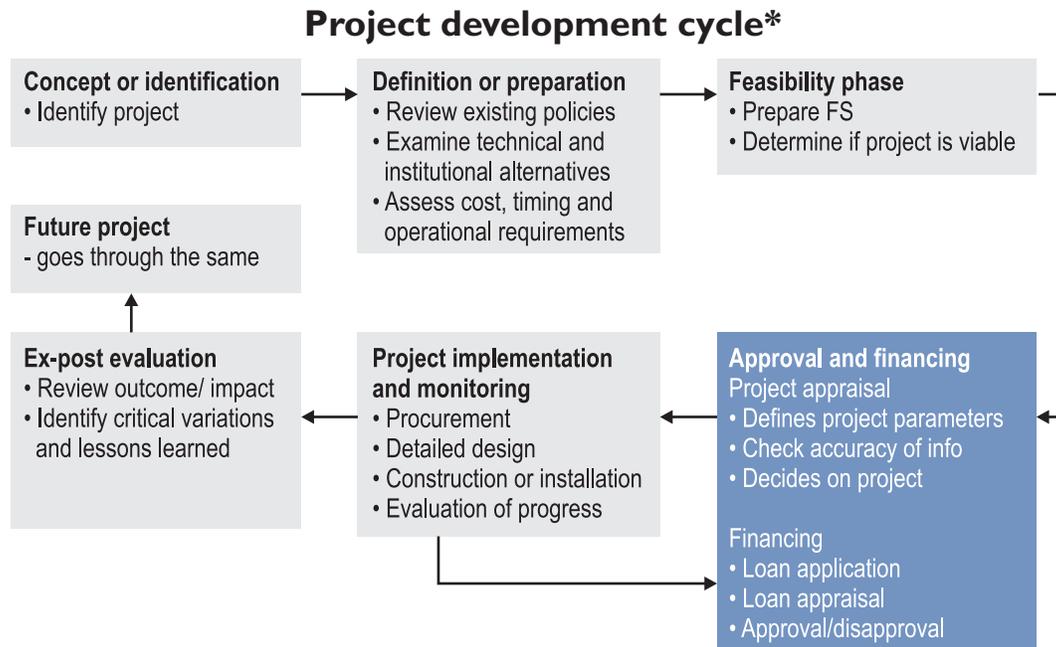
plant. Comparing the amount of water that enters the system with water actually sold allows the utility to measure its non-revenue water. Many water utilities use district meters to measure the volume of water supplied to distinct areas within its system. These meters allow them to identify areas with leaks and/or high levels of NRW. Service connection meters are installed at every service connection to account for water consumed and the corresponding charges.

- **Service connections.** Consumers access the water supply system through its service connections, which include meters, curb stop or turnoff valve and box, and a line that connects the water meter to the distribution line.
- **Fire hydrants.** Hydrants provide water for fighting fires and are used to flush sediments out of the system. In residential areas, water utilities are required to connect hydrants to 100 mm distribution pipes and space them 180 meters apart. In commercial/industrial zones, hydrants should be connected to 150 mm distribution pipelines and installed 135 meters apart.

When designing new projects or implementing a major system rehabilitation, water utilities should conduct a hydraulic analysis to determine peak hour demand, maximum day demand, average day demand, minimum hour demand and filling condition, and fire flow. They should also conduct field studies of their existing distribution system to assess its present condition, identify deficiencies, isolate areas of inadequate service, determine unit consumption and location of large water users, and identify necessary improvements.



Chapter 6. Project appraisal



A project appraisal is effectively a validation of the project feasibility study. To judge its bankability, appraisers analyze a project in terms of technical and market analysis, cost, financial, social/political and environmental factors, and proposed implementation plan. Following project and loan appraisal and approval, the WSP carries out the final detailed designs and costing of the project prior to implementation.

Due diligence checklist for project appraisal

This chapter outlines the types of questions an appraisal team needs to answer when conducting an in-depth appraisal of a proposed project.

Technical and operational soundness

Does the proposed project address the problem/s identified in the project study? Has the project study explored alternative solutions to the problem(s)?

- Is there a balance between water source capacity and facilities, and the average day or peak hour demand regardless of the level of water losses? If not, what are the measures being recommended under the EIP?
- Is the pipe network appropriately sized to maintain minimum and maximum pressures?
- Is there a study on identifying and segregating the causes of non-revenue water? Are the recommended corrective measures relevant to the identified causes of NRW? Is the schedule of corrective measures consistent with the projected reduction of NRW?

- Is the project technically feasible in the proposed project site? If a well source is being proposed, do groundwater and aquifer capacity studies exist that support the project? If the project is developing surface water sources, have rainfall and stream flow measurements been completed, and if so, for what time period? Can data be confirmed through correlation with actual rainfall and flow measurements?
- Is the technology appropriate for the present level of expertise of the WSP? Will it require capacity building and staff training?

Cost analysis

- Ensure that quantities reflected in cost estimates are reflected in the preliminary design of works and facilities presented in the feasibility study.
- Check level of detail of estimation. If a single item costs more than 10 percent, then the basis for the cost estimate for that item should be evaluated further.
- Scrutinize the lump sum items, especially if the cost is a significant fraction of the total project cost. If so, request for a breakdown of cost for these items.
- Check assumptions/references for unit costs. If not reflected in the project document, it is good practice to ask the FS preparer or project proponent to submit their assumptions and references for the costs. Compare with available references.

* Source: NEDA, Reference Manual on Project Development and Evaluation

Financial sustainability

- Does the tariff structure provide enough revenue for O&M, debt service, reserves and taxes? Is the tariff level adjusted based on projected cash requirement and projected inflation rates? How does the lifeline rate (minimum charge for the first 10 cubic meters) of the tariff schedule compare with the threshold level of household expense for water (5 percent of the average income of “Low Income Group”)? Does the level of “Ending Cash” in the Cash Flow Projection provide enough buffer for emergencies (3 months O&M expense)?
- Is the projected number of connections consistent with the market survey and population growth of the locality? Are there appropriate marketing campaigns to support the projected market growth? Does the market survey and projected growth of service connections support the proposed capital expense program on pipeline extensions and service connections?
- Is the projected increase in consumption consistent with the existing consumption pattern of the locality and/or similar communities?
- Has the WSP presented the project and planned tariff structure to its customers through a public hearing? What is the hearing officer’s assessment? Did the regulator (NWRB, LWUA or LGU) approve the proposed tariff structure?¹⁹
- What is the source of WSP equity or counterpart? How and when will it be made available? If it is coming from an outside source, is there a legal agreement to ascertain its provision? Are there reasons to believe that the counterpart will not be provided? Will the equity be provided in kind or in cash?
- In case of default or events leading to default, are there available interventions to correct or avert the situation?

Social and political soundness

- Does the project address the priority needs of the locality? How do residents perceive the project? Do present and future customers of understand and appreciate the project as conceptualized and designed by the WSP?
- What is the perception of customers as to the present quality of service delivered to them? Do they trust the WSP can improve its services by implementing the project?
- In securing water rights for its water withdrawal from the source, does the WD have any conflict with present water users, e.g., farmers, irrigators, other WSPs, fishermen?

- Are there programs by the WSP to promote “project ownership” by the community through involving local labor during project construction?
- Does the WSP have an advocacy program to win the support of local leadership for the program?
- What image does the WD project to the local leadership? Will the local leadership support the WSP’s proposed project?

Environmental

- Will the project require environmental impact assessment and environmental clearance?
- Will the implementation of the project produce environmental damage? What measures can be taken to mitigate the effects? Would the mitigation measures be sufficient?

Project implementation

- Can the project be implemented any time during the year, regardless of the season?
- Will the project be implemented by the WSP or by a contractor?
- Is the project size attractive to contractors? How will the required equipment and expertise be made available? If a contractor is employed, what is the extent of the contractor’s responsibility?
- Does the WSP have the technical expertise to supervise the project’s implementation or will it hire services for project supervision?
- How will outside services be procured? Is there an existing procurement procedure? Are these provided for in the project estimate?
- Does the project estimate provide for price and quantity contingencies?
- Is there an officer or project management unit to provide progress reports and feedback on the project’s progress, not only in construction but also in implementing other short and long-term recommendations in the study to improve the WSP’s efficiency ratios?

Institutional analysis

While the technical aspects of a loan request define the project’s technical viability or desirability and the financial aspects ensure the ability of the WSP to repay the loan, it is the people of the institution who will make it all happen through their implementation, decisions, and actions. A senior LWUA official once noted that “there are three things necessary for a water utility to succeed—water, money, and a capable manager. Among these, the most important is a capable manager.”

¹⁹ However, it must not be construed that actual tariff approvals are pre-requisites for loan processing. Tariff I approval can be made as one of the conditions precedent for the actual release of the loan.

LWUA's experience underscores that the difference between creditworthy and non-creditworthy utilities is usually determined by the people managing the utility. During project appraisal, the institutional analysis will help the evaluator assess the relative strengths and weaknesses of the organization, and determine whether the strengths offset any weaknesses, and if not, if there are specific measures that should be implemented prior to loan approval.

The institutional analysis considers six areas of a utility's operations. This is accomplished through interviews with the people both within and external to the organization, and by reviewing key documents. The following are the types of questions and information an analyst should answer in completing an institutional analysis.

- **Vision.** Does the utility have a clearly stated vision that is widely known to its staff? A good way to check is to ask three people working in different parts of the organization to give the utility's vision statement. A documented vision statement or any documents that might contain the vision statement, such as the annual report, may also be requested. The vision should provide a futuristic picture of what the utility wants to attain. If a water utility has a vision statement but the staff cannot state it, then probe why. Confirm that the LGU vision and WD vision for the community are in harmony.
- **Goals.** Does the water utility's business plan or other planning documents spanning a one to three-year period describe short (1 year) to medium term (3–5 years) goals? Ideally, goals should be specific, measurable and time-bound. Look for documents required by top management or the board to determine whether the utility's senior management are monitoring and reporting progress against these goals on a regular basis.
- **Cultural values.** Interview staff on the presence of employee unions or employee associations and determine whether its objectives are aligned with that of the organization. Check the relationship between board and management and determine whether dysfunctional conflicts occur with respect to decision making, delegated authority, and board remuneration. Check for current legal conflicts as well as morale among employees.
- **Structures, systems and processes.** Compare the actual organizational structure to the most recent structure approved by the board and get reasons for any deviation. Interview unit heads to

determine if sufficient authority has been delegated for them to accomplish their desired tasks. Confirm with LWUA about the integrity and security of the WD commercial practices, especially with respect to billing and collection. Review past COA audits to get additional information. Where does the WD invest its cash? Are they prudent or do they resort to high-risk investments? Determine the monitoring reports which are required by the manager and unit heads. Review these reports for completeness, timeliness and action taken by management. Look into the key performance indicators being monitored by the WD and assess actions taken by management on areas needed. Non-monitoring or lack of performance targets is an indicator of poor management.

- **Resources.** There are obviously some components lacking in the subsystem hence the need for loan funds and projects. Check for people resources, their qualifications vis-à-vis their position. Are there enough technical staff, (engineers, accountants, etc.) and are they in the right position? Check the total number of employees, taking into account benchmarks for staff per thousand connections (less than 8 per 1,000 connections or 1 per 120 is a good indicator of staff productivity). Check for staff training activities to determine how the organization views staff development.
- **External relations.** Check with various stakeholders outside the water utility to determine the goodwill (or lack of it) that the WD has built over the years. These will include the LWUA, depository banks, LGU officials, media and suppliers/contractors. The relationship with LGU officials is crucial as this has the most impact on WD operations, i.e., in securing construction permits, tariff adjustment endorsements, board member selection, and even provision of financial resources. Review minutes of public hearing especially on the support or lack of it as shown by its consumers, civil society and LGU representatives. Lastly, look into how customers are being treated by the WD. Does the WD give information sessions or manuals to prospective clients on their rights and responsibilities? Look into customer complaints and determine the percentage of complaints related to billings. Look into the utility practice of settling customer billing complaints. Study the payments made by the WD to its suppliers/contractors. Are they being paid the right amount at a reasonable period? The behavior of organizations will be congruent. If the WD, in general, shows inappropriate behavior towards these mentioned stakeholders, they will show the same attitude toward the bank.

Focus on financial modeling and forecasting

In evaluating a project proposal, the analyst will normally make a financial forecast for the project for a defined time period. The financial model helps the analyst make recommendations on the loan proposal and provides direction on possible actions or alternatives based on the information presented.

This sub-section is based on the due diligence experience of LGUGC and partner financial institutions with 15 water districts belonging mostly to the big to very large categories and with credit ratings of at least “BBB” under the LGUGC’s Water District Credit Rating System.

To develop the financial model and projections, the analyst needs to obtain, at a minimum, the borrower’s:

- Monthly data sheets
- Audited and interim financial statements
- Schedule of receivables
- Existing loan agreements
- Project study

Ideally, the analyst should evaluate the monthly data sheets and audited financial statements for the past five years to establish trends and make plausible assumptions for financial projections.

Critical assumptions

To build a financial model for a water project, the analyst needs to identify the critical assumptions. For an assumption to become plausible, the financial analyst has to have: a) a clear understanding of every parameter; b) sufficient data available, and c) adequate experience/background of the industry. Below are some of the critical assumptions that need to be answered in preparing a financial model. These assumptions are divided into two principal groups: technical/operational assumptions and financial assumptions. Specific examples drawn from the case study of the Retawon City Water District (Appendix 4) have been used.

Technical / operational assumptions

Expansion of service connections

To assume a growth rate for the succeeding years, refer to the historical trend and assume significant increases if the loan is meant for expansion. Surveys on willingness to connect and to pay the proposed tariff by households in the proposed expansion area may serve as basis for the projection. Household mapping is another way of validating areas for expansion. In some cases, resolutions from barangays or subdivisions requesting the turnover of existing water systems or new connections may justify the assumed increase in connections. Official population

projection must also be checked to ensure that the projected service connections are still achievable against population.

Retawon City Water District (RCWD)

The Retawon WD’s project intended to increase the number of concessionaires in the district. The RCWD finance officer presented an increase of 792 connections per year for the next five years, which was way below the 13,390 households willing to connect to the water district’s pipeline, as identified in a survey undertaken by the RCWD marketing head.

What an analyst can do here is advise the client to consider increasing the targeted number of connections per annum to a more reasonable level, e.g., 1,000. Moreover, the expansion may be prioritized in the city center where most establishments are concentrated, to optimize marketing opportunities.

Non-revenue water

To forecast NRW, look at the historical data, particularly the latest, and compare this with the WSP’s strategy to reduce NRW. The strategies may include actions such as the replacement of old and defective pipes and fittings, or a massive campaign against illegal connections.

RCWD posted a 58 percent NRW in 2006 and 60 percent in 2007. The high NRW may be attributed partly to leakages because of old pipes (RCWD was put up in 1950, with no extensive improvements on its facilities throughout the years). Its existing storage facility is riddled with cracks, which also contributes to the high NRW. Restoration of this storage facility is now part of the project. Operational data also indicate high NRW in the industrial district where there are informal settlers. It is possible that pilferage may come from this area. Despite the proposed loan, RCWD projects a very marginal annual decline in NRW until it reaches 41 percent level in 2017.

The analyst should recommend revisiting the program of work to focus more effort on NRW reduction rather than source development. If RCWD adopts the target increase in service connections of 1,000 per annum, NRW must be significantly improved because the projected demand cannot be met by existing and projected new water supply. If the NRW is curbed to a desirable level, e.g., 25 percent, then source development may no longer be necessary. The money allotted for source development can instead be utilized for expanding service connections to accommodate the 13,390 households that signified willingness to connect to Retawon sooner than the current plan.

Average consumption per connection per month

Average consumption per connection per month can be derived by dividing billed water with the total number of connections. The consumption pattern should be analyzed to see if it is based on constrained demand (low consumption attributed to lack of water supply, particularly during peak hours). In such case, the average consumption per connection can be expected to increase if the loan purpose is to improve water supplies. The usual range for this is 23 to 30 cubic meters per month.

RCWD registered an average consumption per connection of 23 cubic meters per month in 2006 and 2007. According to the information stated in the case study, RCWD concessionaires are complaining of poor service as water pressure during peak season is almost zero. Since the project is a combination of rehabilitation and expansion, it is expected that water consumption per connection will increase. The rehabilitation will reduce wasted water while source development will increase water supply. Both shall address the low water pressure complaint of RCWD customers and shall facilitate an increase in consumption per connection.

The analyst may consider adopting the assumed average consumption per connection per month as presented by RCWD which gradually increases from 23 to 30 cubic meters per month by 2017.

Water production capacity

Production capacity is evaluated primarily to check if there is enough water supply for the projected increase in water demand. In case of a substantial increase in number of connections, water supply may be augmented by the development of new supply sources. Supporting documents for source development must be obtained, such as results of a geo-resistivity survey for projects involving drilling of wells. For projection purposes, consider only the rated capacity of each source, e.g., for a well with 25 liters per second (lps) capacity, the analyst may want to assume only 18.85 lps (75 percent). This means the well operates for 18 hours only with the remaining 6 hours as buffer or maintenance period.

Financial assumptions

Tariff

Tariff is critical for a water utility. The LWUA website provides a copy of the manual on water rates for water districts (see http://www.lwua.gov.ph/water_rates_08/water_rates_index.htm). This will be a good reference in understanding tariff setting for water districts. (The guidelines are also summarized in Box 1 in Chapter 2.)

The standard practice is to set a minimum tariff for consumption up to 10 cubic meters per month. The rates then increase every 10 cubic meters. Tariffs also differ between customer types, such as residential, commercial/industrial, and institutional/government.

It is always prudent to assume water rates that are cost-based, competitive, and affordable. Equally important is the ability of the WD to implement projected tariff increases according to its proposed schedule. This is why it is important to look at the WD's track record for at least the past 10 years. The analyst should then assess the ability of the WSP to implement the projected tariff schedule. A sensitivity analysis must be conducted to determine the latest possible implementation of a tariff hike and the minimum tariff increase that the WSP's cash flow can absorb. The resulting figures should then be discussed with the WSP management for consideration. There are instances where banks make approval of the tariff increase schedule a condition of loan release. This is a good strategy for some WDs as some boards of directors choose to delay implementation of tariff hikes despite approval.

Looking at the Regional Water Tariffs as of September 2007 as provided by the RCWD's project proposal, the analyst would note that Retawon has the second highest minimum charge at P210 per cubic meter. This is 21 percent higher than the P174.05 average minimum charge of the other 19 WDs in the region. It was stated that RCWD intends to increase tariff by an average 10 percent per annum for three consecutive years starting 2008, despite a rate hike in February 2006.

Collection efficiency, accounts receivable, penalty charge

Collection efficiency is computed by dividing the collections, including arrears for the current year, by total water billings, inclusive of penalty charges, multiplied by 100. This can be projected based on historical data and the new strategies of management to improve collection efforts. Most WDs have a collection efficiency of 90 percent and above because they impose penalty charges and cut service connections after two months of non-payment.

A 10 percent penalty on their water bill is charged to customers immediately after the due date. This penalty charge contributes about 3 percent of water revenues because on-time payment (computed by dividing current collections with current billings) is normally registered at 60-70 percent.

It is very important for the analyst to examine the schedule/aging of receivables. Most WDs are not authorized by LWUA to write off receivables even if collecting these is

no longer feasible. It is possible that of the P20 million in accounts receivable posted on the WD financial statements, P15 million are already due for write-off. (Some receivables have been accumulated for more than 20 years, yet the Commission on Audit refuses to let WDs write these off.) This does not automatically reflect poor performance, however. A 20 percent receivable accumulated for 20 years could mean only 1 percent bad debt on a yearly basis. Some of these bad debts are bills of municipal or city halls which are not paid because local government units' demand for service in lieu of shares in the WD. In such cases, WD management and the LGU need to reach a compromise.

RCWD presented a collection efficiency rate of 89 percent in 2007. The projected collection efficiency rates and resulting accounts receivable and penalty charges for 2008 to 2017 are deemed acceptable for a conservative financial projection. However, the analyst can discuss with RCWD management the need to gradually increase collection efficiency up to at least 95 percent.

Connection fees and customer deposits

Most WDs assess connection fees at cost plus a margin. The cost for a new service connection would normally range from P3,000 to P5,000. To attract new customers, WDs often offer a deferred payment plan on the connection fee of up to 1 year without interest. A customer deposit equivalent to twice the minimum charge is also assessed for a new customer.

A new customer of RCWD shall be assessed a connection fee of P4,000 which can be amortized in a year, while the customer deposit shall be P420 or twice its minimum charge of P210.

Terms of existing loan/s

The analyst should obtain a copy of the loan agreement/s of a water district to confirm the assets pledged as collateral and to learn about restrictions imposed by previous lenders. Most WDs have existing loans with LWUA. Private financial institutions, on the other hand, require the credit enhancement of LGUGC. The PFIs provide term loans of up to 10 years with a grace period that is usually based on project construction period. Refer to Table 18 for LWUA and PFI loan terms.

The loan amount is usually based on the project cost. While LWUA and GFIs require at least 10 percent equity, the PFIs guaranteed by LGUGC can fund 100 percent of a project's costs. The PFIs usually prepare a sensitivity analysis to identify the threshold for converting variable interest rate to a fixed rate as a value-added service to the borrower.

PFIs may propose a variable interest rate with a one-time option to convert to fixed rate to save on interest cost. To illustrate, the variable rate as of June 27, 2008 is approximately 7.25 percent for a "Rated A+" water district. However, for projection purposes, the analyst may use 10.5 percent for a conservative 10-year forecast.

In the case of RCWD, a 10-year loan term is acceptable because its excess cash may be allocated for undertaking projects leading to NRW improvement. The excess cash does not mean that the RCWD must secure a shorter term loan because WDs normally have other capital expenditures which are not part of the loan proposal.

Table 18: Loan terms for water projects

Particular	LWUA	PFI
Term	Up to 25 years	Up to 10 years, indicative term only
Interest	Graduated (currently at 8.5–15%) First 2 million – 8.5% Next 5 million – 10.5% Next 13 million – 12.5% Next 30 million – 14% Next 50 million – 15%	Fixed or variable with one-time option to convert to fixed rate; based on PDST-F plus spread of up to 3%. The spread is risk-based.
Principal repayment	Equal monthly installments	Monthly; amounts based on projected cash flow during account evaluation
Security	Reserve fund	Combination of the following: • LGUGC Guarantee • Deed of Assignment of reserve fund • Deed of Assignment of water billings

Reserve fund

The reserve fund is normally a percentage (3–10 percent) of water sales set aside monthly in a deposit account built-up by the WD up to an agreed fund level. The borrower executes a deed of assignment (DA) on the reserve fund which serves as the main collateral to lenders. Normally, the holdout amount is equivalent to the highest 3 months' worth of amortization.

Section 14 of Chapter VIII of PD 198 encourages WDs to set aside a portion of their income in a reserve account which shall be disbursed for payment of contractual obligations, reserve for debt service, operation and maintenance, and for expansion and improvement of the WDs' physical facilities.

This same section is the basis of lenders in requiring the deed of assignment on the reserve fund. Under the DA, the borrower cannot withdraw from the reserve fund without consent from the lender. However, the DA also provides that the lender shall not unreasonably withhold such consent.

For the RCWD financial projection, the analyst should set aside about three percent of water sales each year for the reserve fund account under Cash Flow from Financing Activities because the prospective lenders will require the reserve fund as a security.

Production and maintenance expenses

The production and maintenance expenses usually include water supply, pumping, water treatment, and transmission/distribution expenses. These expenses are computed by dividing actual cost with total water production. To project for these expenses, the analyst will multiply the unit cost with the volume of water production. The unit cost per expense item is assumed to have an annual escalation rate based on historical trend and projected inflation rate.

RCWD's unit costs (Appendix 4) are the following: water supply at 0.39, pumping at 3.40, water treatment at 0.19, and transmission/distribution expenses at 1.60. The analyst should discuss with the RCWD finance officer the reason for the reduction in pumping cost by 10 percent as early as 2008 when the project is expected to be operational only towards the last quarter of 2009.

Administrative and customer expenses

Administrative and customer expenses include salaries and wages, provision for bad accounts, and depreciation. These are projected based on historical data and proposed projects.

In the case of depreciation expense, COA Circular No. 2003-007 prescribes the computation of depreciation of assets for government institutions. The depreciation rate

is computed by setting aside 10 percent residual value of an asset while the remaining 90 percent is divided by the estimated useful life of the asset. The following are the usual project assets for financing with their respective estimated useful life: a) office building and other concrete structures, such as pumping stations and reservoir - 30 years; b) machineries and equipment like pumping/production/water treatment equipment - 10 years; c) office and IT equipment - 5 years; and d) motor vehicles - 7 years.

For RCWD, the case shows that historical growth rates for salaries and wages were at 7.2 percent, and provision for bad accounts were at 4 percent. However, the projected escalation rates were erratic and required explanation, especially those in 2010, when salaries and wages increased by 33 percent as against much lower rates in previous years.

Finance charges

Interest rates and guarantee fees are the usual finance charges seen on a WD's income statement. Most private financial institutions waive the gross receipt tax (GRT) on interest on loans, processing fees and commitment fees. However, some government financial institutions charge GRT, processing and commitment fees for WD loan transactions. All these finance charges must be considered in the financial projection.

Corporate income tax and franchise tax

A BIR ruling requiring WDs to pay a 32 percent corporate income tax is still being questioned by the WDs, but certainly they are subject to a franchise tax of 2 percent of total gross receipts. A few WDs however do not pay the franchise tax.

For prudence, the analyst should provide for both corporate income and franchise taxes in formulating the financial model. For more information on the issues on corporate and income taxes, refer to BIR Revenue Memorandum Circular No. 63-2003 and DOJ Opinion Case No. OSJ-2005-03.

Financial ratios

Once the above critical assumptions are covered, the financial analyst can set up the income statement, cash flow and balance sheet, and use these to estimate indicative thresholds for financial indicators.

While the following financial ratios are good indicators of the past financial performance of a borrower, the analyst must remember that ratio analysis is a retrospective and not prospective examination. This is precisely the reason why, in the discussion of critical assumptions, there is a reiteration on the need to consider the potential impacts of

the proposed projects as well as the management strategies to improve operating and financial performance.

Debt service coverage ratio

The debt service coverage ratio (DSCR) indicates how many times over cash flow from operations covers the WD's obligations. It is calculated by dividing the EBITDA (earnings before interest, tax, depreciation and amortization) by the annual debt amortization. Based on the profile of WDs evaluated by LGUGC and partner financial institutions, the DSCR averaged 7.2 from a range of 1.2 to 47.9.

Retawon's DSCR was computed at 2.0 in 2007 while projected DSCR until 2017 is expected to average 2.5 which is considered acceptable.

Debt to equity ratio (total liabilities / total equity)

The debt to equity ratio measures solvency. It is a financial ratio that indicates the percentage of a company's assets provided by debt, and is calculated by dividing the WSP's total liabilities by its total equity. For water districts, one must not expect low leverage ratios because most WDs borrow to undertake major capital expenditures. The average debt to equity ratio of WDs subjected to evaluation by LGUGC is at 1.6 from a low of 0.1 to a high of 5.1.

The debt to equity ratio of RCWD was at 0.3 in 2007. The projected debt to equity ratio for the duration of the loan shall average 0.6, well within the usual cap of 1.0.

Current ratio

The current ratio compares a firm's current assets to its current liabilities. It measures whether or not a company has enough resources to pay its debts over the next 12 months. Meeting the ideal current ratio is usually not a problem for WDs because they collect revenues on a monthly basis. The current ratio of the 15 sample WDs averaged 2.5 which means they are generally considered to have good short term financial strength.

RCWD posted a current ratio of 6.0 in 2007 while the projected current ratio will range from 6.4 to 30.5, for an average of 16.1.

Net profit margin

The net profit margin reflects an entity's pricing policies and its ability to control costs, and measures the WSP's ability to sustain operations and invest in new projects. Net profit margin is calculated by dividing net income by total revenue. Differences in competitive strategy and even payment of taxes cause the profit margin to vary among different water utilities. The net profit margin of previously evaluated WDs averaged 12 percent.

In the case study, the average net profit margin of RCWD was projected at 14 percent, much higher than the 2007 record of 1 percent.

Return on equity (net income / total net worth)

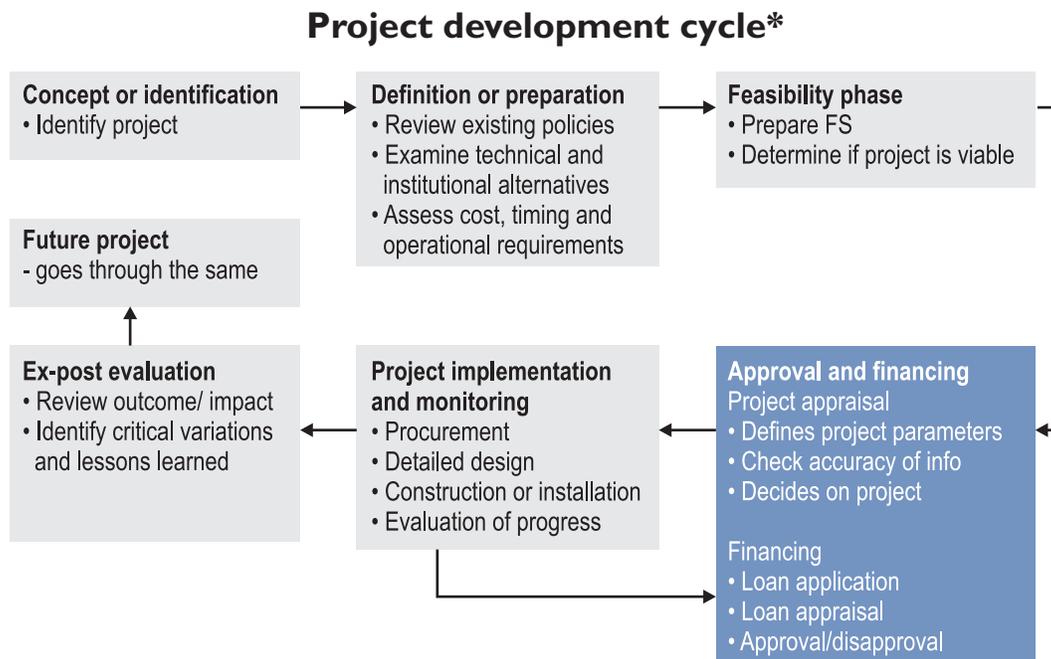
Return on equity (ROE) is considered one of the most important financial ratios. It measures an entity's efficiency at generating profits from every peso of net assets, and is calculated by dividing net income by total net worth. In the case of WDs, the business is very capital-intensive, requiring large capital investments before profit can be generated. The average ROE of 15 WDs evaluated by LGUGC was 16 percent.

The ROE for RCWD in 2007 was at 1 percent and is projected to gradually increase from 9 percent in 2009 to 15 percent in 2017.

III.

LOAN APPLICATION, APPROVAL, AND IMPLEMENTATION

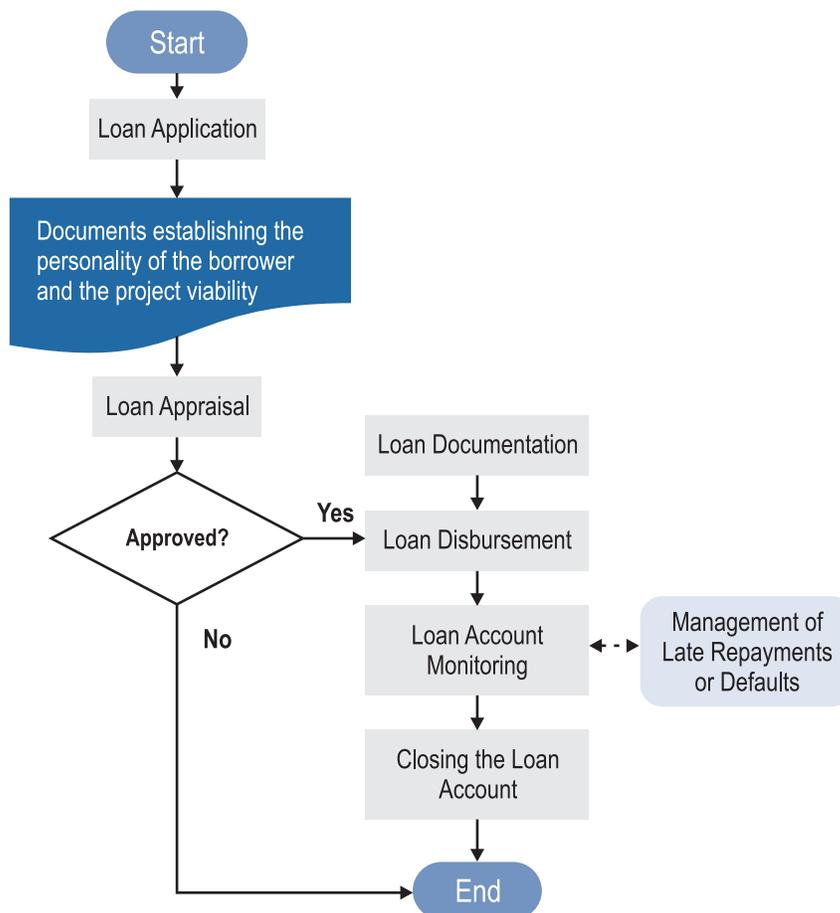
Chapter 7. Loan application and approval



The document requirements for loan applications (Figure 8) from water districts and local government-managed water systems should enable loan officers to assess the creditworthiness of the institution and the project. Should the loan application be approved, many of these documents, either in their initial or updated forms, can be used during the loan disbursement (project construction) and loan account monitoring (loan repayment) stages.

The usual loan application requirements from water districts and LGUs are outlined in Table 19. This checklist is merely illustrative as lending to the water supply sector is highly context-specific and the loan officer must tailor such checklists to the specific requirements of the program.

Figure 8. Process flow for a loan account



* Source: NEDA, Reference Manual on Project Development and Evaluation

Table 19. Checklist of loan application requirements

Required documents	Water districts	LGUs
To assess the personality of the borrower		
Accomplished loan application form	✓	✓
Bio-data of the official signatories	✓	✓
List of key officials including Board of Directors	✓	
List of key LGU officials		✓
Water district board resolution: <ul style="list-style-type: none"> • Authorizing the general manager to negotiate and sign the loan documents • Committing to provide equity (if applicable) • Committing to secure needed permits and acquire needed site and right of way 	✓	
Sanggunian resolution: <ul style="list-style-type: none"> • Endorsing the project • Authorizing the LGU chief executive and the LGU treasurer to negotiate and sign the loan documents • Committing to provide equity (if applicable) • Approving the IRA assignment or assignment/mortgage of other assets 		✓
Latest three-year COA-audited financial statements	✓	✓
Interim financial statements	✓	✓
Certificate of Borrowing Capacity and Debt Service Capacity issued by the DOF-BLGF		✓
Certificate of Indebtedness signed by the Water District/ LGU Treasurer and/or Accountant, including copies of existing loan agreements with debt service schedules	✓	✓
List of outstanding loan balances with other financial institutions, duly certified		
List of Bank accounts especially Joint Accounts with LWUA, reserve funds, etc.		
Regular documentary requirements pertaining to offered collaterals such as Transfer Certificate Title, tax declaration, vicinity map and lot plan	✓	✓
Clearance/endorsement from LWUA	✓	
Certificate of Conformance or Conditional Certificate of Conformance issued by LWUA	✓	
Additional documents required if lender is a PFI: <ul style="list-style-type: none"> WD Board Resolution on opening a deposit account with the PFI Clearance from DOF-BLGF allowing the WD to open an account with the PFI 	✓	
To assess project viability		
Feasibility study with: <ul style="list-style-type: none"> • Development plan and program of work • Detailed project cost estimates • Initial environmental examination or environmental impact statement • Willingness-to-connect-and-pay survey 	✓	✓
Monthly data sheet, if applicable	✓	

Lenders must be aware that political dynamics play a crucial role in securing local legislative council (Sangguniang Bayan, Sangguniang Panlungsod, or Sangguniang Panlalawigan) resolutions in the case of LGU-managed water systems. Moreover, since all LGU-run water utilities are not ring-fenced and do not have adequate cost recovery mechanisms, loans to these LGUs will be repaid from general revenues.

GFI can require LGUs to assign a portion of their IRA for debt servicing and collateral. PFIs can also ask the LGU to sign a deed of assignment of IRA. However, since PFIs are, in general, not authorized depository banks of LGUs, the IRA deposits are not physically with the PFIs.²⁰

²⁰ LGUs cannot use private banks as depository banks without a waiver from the BSP. PFIs may resort to a tripartite agreement with the LGU and GFI on the issue of assigning and IRA deposits.

The lender should ensure that the LGU borrower submits a certification from the DOF-BLGF of the LGU's borrowing and debt service capacity. As of 2008, the BLGF requires LGUs to submit the following documents when requesting for such certification:

- Letter from the local chief executive indicating the name of the lending institution and the purpose of the loan
- Copies of detailed income and expenditure statements with pre-closing trial balance for the last three years certified and audited by the local accountant and auditor
- Current year's annual budget
- Annual investment plan for the LGU's 20 percent development fund
- Updated certification of the total outstanding balance of existing loans duly certified by the local treasurer and lending institutions
- Updated statement of annual amortization schedule duly certified by the local treasurer and concerned lending institutions

In the case of water districts, political dynamics also play a role in securing WD board resolutions because the mayor or governor is the appointing authority for the directors. Due diligence requirements should include a Certificate of indebtedness signed by the water district treasurer and/or accountant, including copies of existing loan agreements with debt service schedules, and audited financial statements for the past three years, and interim financial statements.

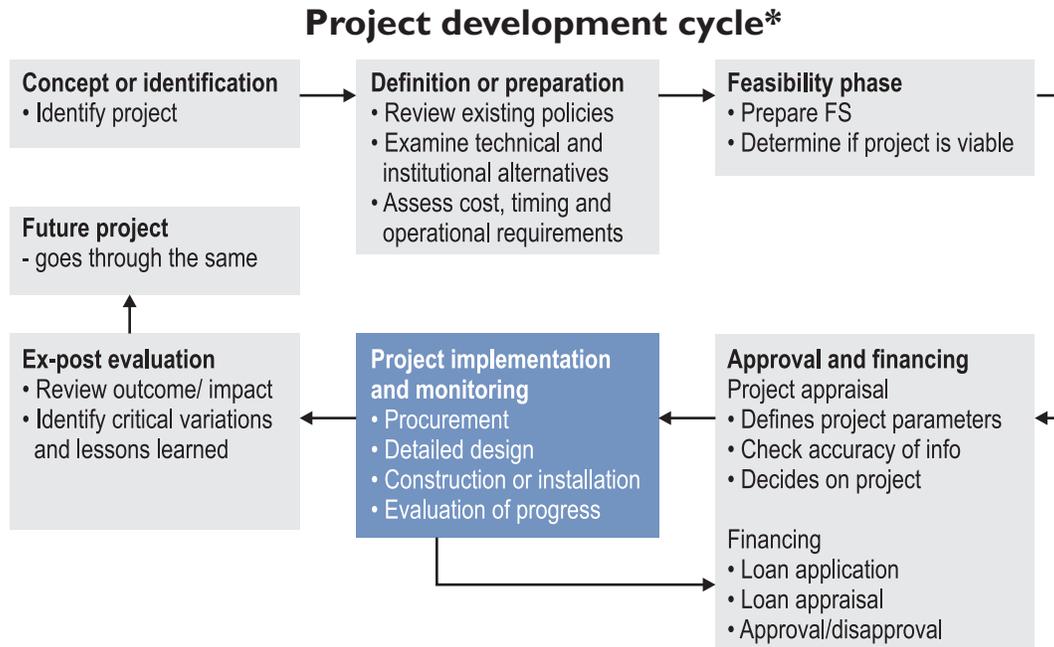
As the primary lending institution to WDs, LWUA requires WDs to secure a clearance or endorsement from it whenever a WD seeks loans from other lending institutions. This is designed to protect LWUA's exposure to the WD. LWUA also requires WDs to secure a waiver if a lending institution insists on being treated equally

with LWUA in the event of default. It also requires the WD to pay pre-termination fees if the PFI loan is to refinance an existing LWUA loan. A water district-loan applicant must also present a LWUA-issued Certificate of Conformance or Conditional Certificate of Conformance which certifies that the WD is in compliance with existing standards on water quality, facility design and construction, materials, equipment and supplies selection, operations and maintenance procedures, and training of personnel. Unfortunately, no institution issues a similar certificate to LGU-managed water systems and lenders should hire engineers who can evaluate the conformance of these systems to established water supply standards.

Evidence of project viability can usually be distilled from the feasibility study. Special attention should be accorded to the willingness-to-connect-and-pay surveys. Such surveys are crucial because the failure to determine the willingness of households to pay for potable water can lead to inaccurate demand estimates and network capacity design. To facilitate the assessment of the viability of the project and to have some baseline data for loan account monitoring, lenders may also require the loan applicants with existing LWUA loans to submit copies of the LWUA-designed Monthly Data Sheet (MDS). These data sheets are usually prepared by the WD's finance department head and signed by the general manager. However, there is no consistent validation or audit of these monthly data sheets. In order to have some confidence on the validity or accuracy of the interim MDS, these sheets are compared with the audited financial statements of the past three years.

As part of the loan application process, lenders are encouraged to document meetings with the borrower and conduct site visits to ensure that all the loan application requirements are in order. It also helps for banks to have a manual of procedures for evaluating the submitted documents and the protocols for site visits.

Chapter 8. Loan implementation



Procurement

A water service provider will inevitably carry out procurement to implement a water supply development project. Looking at the project development cycle, the WSPs may need to procure (1) consultants and associated services for pre-investment studies and detailed design services, (2) goods and infrastructure (through a contractor) for the construction of water supply facilities, and (3) supplies and materials for the operations of the constructed system.

All publicly-owned WSPs must follow the procurement rules described in the Government Procurement Reform Act (RA 9184) and its implementing rules and regulations (IRR). Box 7 summarizes the key principles of RA 9184. Its implementing rules cover government procurement activities, with the following exceptions/conditions:

- Acquisition of real property shall be covered by the Act to Facilitate the Acquisition of Right-of-Way Site or Location for National government Infrastructure Projects and for other Purposes (RA 8974).
- Private sector infrastructure or development projects shall be covered by the Act Authorizing the Financing, Construction, Operation and

Box 7. Guiding principles of RA 9184

The following are key guiding principles for procurements managed by WDs or LGU-operated utilities:

- Transparency in the procurement process and in the implementation of procurement contracts.
- Competitiveness by extending equal opportunity to eligible and qualified companies.
- Streamlined procurement process.
- Accountability of public officials directly or indirectly involved in the procurement process and implementation of procurement contracts and the private parties awarded contracts.
- Public monitoring of the procurement process and the implementation of awarded contracts.

Maintenance of Infrastructure Projects by the Private Sector, and for Other Purposes (RA 7718). However, for specific components financed by the government, the provisions of RA 9184 and its implementing rules shall apply.

- Procurement provisions of a treaty, international or executive agreement common to foreign-funded projects shall be observed.

* Source: NEDA, Reference Manual on Project Development and Evaluation

Competitive bidding under RA 9184

All government procurement shall be done through open, public, competitive bidding, although alternative methods of procurement can be undertaken (see section on ODA or foreign-funded projects). The procurement procedure for competitive bidding for consulting services and for infrastructure projects are shown in Figures 9 and 10, respectively.

As shown in Figure 9, after evaluating eligibility requirements, the selection of the consultant can be done through either of two prescribed methods: quality-based or quality-cost based. Both consider the technical proposal as a basis for selecting the consultants, but in the quality-cost based method, the financial proposal is also considered. In either method, the “Highest Rated Responsive Bid” is the winning bid.

Figure 9. Procurement flowchart for consulting services

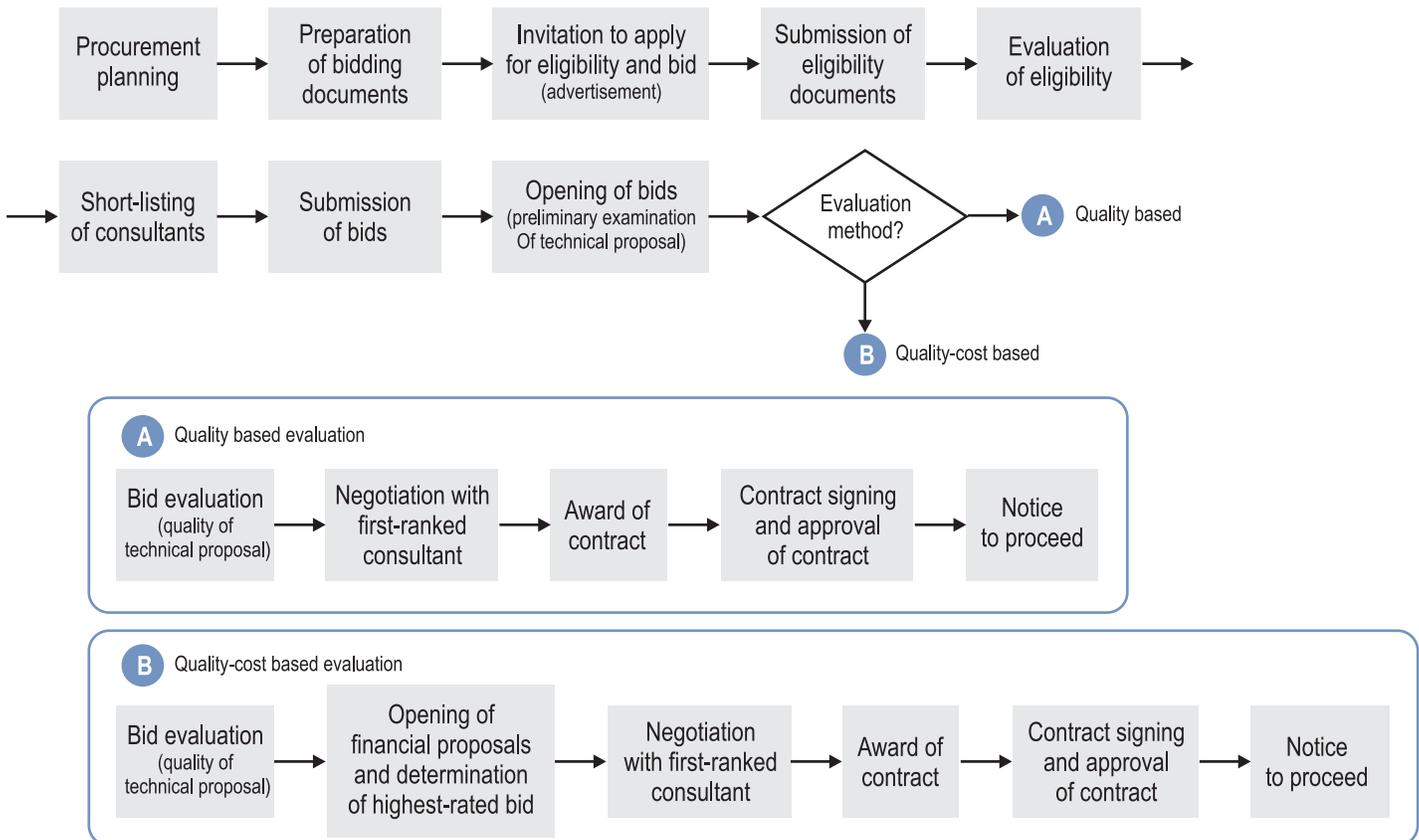
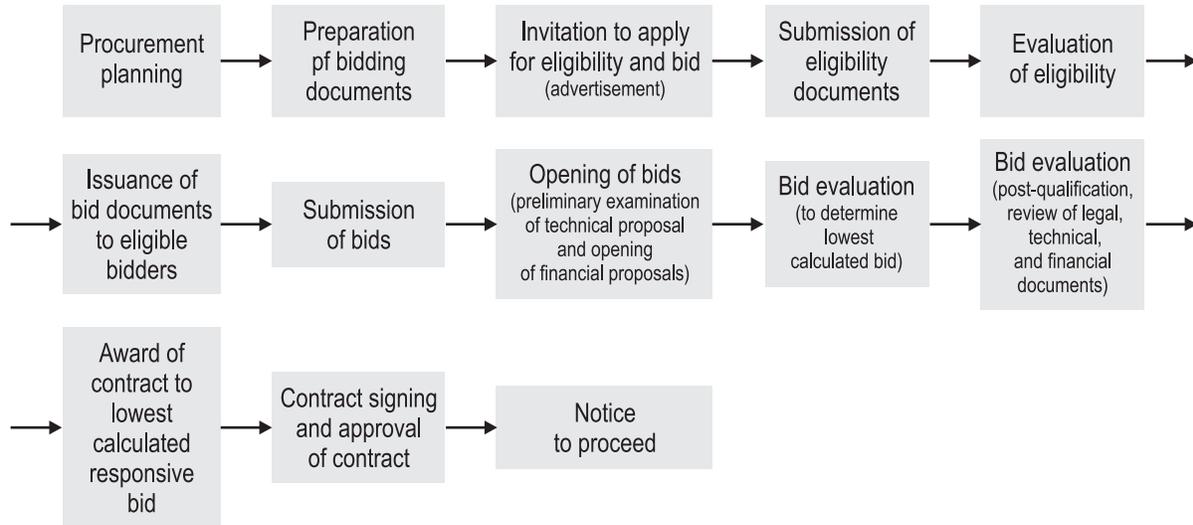


Figure 10. Procurement flowcharts for infrastructure projects



For infrastructure projects, the bidder with the lowest bid is awarded the contract, as long as it meets the minimum required eligibility and technical requirements. The lowest calculated responsive bid is considered the winning bid.

Key rules for competitive bidding

The more important points of RA 9184 for competitive bidding are as follows:

- Each procuring entity will have a Bids and Awards Committee (BAC) which will undertake the principal procurement activities, including the pre-procurement and pre-bid conferences, evaluate eligibility of bidders, evaluate the bids, resolve motions for reconsideration, and recommend awards of contract. For WDs, the head of the procuring entity shall designate the Chairman and Vice-Chairman of the BAC. For LGUs, the local chief executive shall designate the members of the BAC, who shall elect among themselves the Chairman and Vice-Chairman. The head of the procuring entity is prohibited from being the Chairman or member of the BAC. The BAC is supported by a secretariat.
- The bidding documents shall include the following:
 - Approved budget for contract
 - Eligibility requirements
 - Instruction to bidders
 - Terms of reference for consulting services
 - Scope of work (where applicable)

- Plans and technical specifications
- Form of bid, price form, and list of goods or bill of quantities
- Delivery time or completion schedule
- Form, amount and validity period of bid security
- Form and amount of performance security and warranty
- Form of contract, and general and special conditions of contract

- Except for small procurements (Sec 20.2 of the IRR), a pre-procurement conference is held among the BAC, the BAC secretariat, officials, staff and consultants of the procuring entity who are directly involved in the project.
- No bidding shall be made without the necessary detailed engineering investigations, surveys, and designs.
- For contracts above P1 million, the BAC shall hold a pre-procurement conference to clarify or explain to the bidders the requirements, terms and conditions, and specifications stipulated in the bidding documents.

Ceiling for bid prices. The approved budget for contract shall determine the ceiling price for bids. If the bid is higher than the approved budget, the bidder is automatically disqualified. There is no lower limit for the bids.

Evaluation of technical proposals

- For infrastructure projects, evaluation involves checking the bidders' submissions on (1) legal requirements, (2) technical requirements (competence and experience, personnel to be assigned, and equipment to be used), and (3) financial requirements (credit lines, cash flow, etc.). The submissions are evaluated on a "pass or fail" basis, and a bid is considered responsive if it passes all the criteria.
- For consulting services, evaluation of the technical proposal is based on (1) suitability, qualifications and competence of proposed key staff, (2) experience and capability of the consultant/consulting firm, and (3) approach and methodology to meet the terms of reference. Instead of a "pass or fail" evaluation, numerical ratings are given to each of the submitted technical proposal. The ratings will then be the basis for selecting the consultant.

Failure of bidding. The bidding is considered a failure if:

- No prospective bidder submits a letter of intent or no bids are received
- All prospective bidders are declared ineligible
- All bids fail to comply with the bid requirements or fail post-qualification, or in the case of consulting services, there is no successful negotiation
- The winning bidder refuses, without justifiable cause, to accept the award of contract, and no award is made

Should there be a second failure of bidding, the procuring entity concerned may enter into a negotiated contract.

Exceptions to competitive bidding

Alternative methods of procurement can be undertaken by the procuring entity (Rule 16 of the IRR), as follows:

Limited source bidding. This is for goods and services where only a few suppliers or consultants are known to be available. Direct invitations are sent to pre-selected suppliers or consultants with proven experience and capability.

Direct contracting or single-source contracting. Recommended for the procurement of (1) proprietary items or (2) critical goods from a specific manufacturer, supplier and it is necessary to hold a contractor to guarantee its project performance, or (3) goods sold by an exclusive supplier for which no suitable replacement can be obtained.

Repeat order. This involves procurement of goods from the previous winning bidder. The order should be availed within six (6) months from the original contract, and should not exceed 25 percent of the original quantity.

Shopping. This involves submission of price quotations from qualified suppliers for readily available off-the-shelf goods or ordinary equipment for purchases not exceeding P50,000.

Negotiated procurement. Procurement where a contract is negotiated with a qualified supplier, contractor, or consultant, and resorted to when:

- there has been a failure of public bidding
- there is imminent danger to life and property
- contracts are taken-over for causes provided in the contract, and where immediate action is necessary
- purchases are made from another agency of government
- individual consultants are hired to do highly technical, proprietary, or confidential work

ODA or foreign-funded projects

International or executive agreements covering ODA or foreign-funded projects stipulate the applicable procurement procedures which take precedence over RA 9184 IRR, especially when there are conflicts.

In many cases, especially in projects funded by WB, ADB and JBIC, the procurement process stipulated by RA 9184 and the IRR (see Figures 7 and 8) is generally consistent with the requirements of these financing institutions. The difference lies mainly in:

- Eligibility requirements, particularly where international competitive bidding is required; preference for Filipino consultants or contractors is not allowed
- Ceiling bid prices, where setting of ceiling (or floor) bid prices is not allowed; the approved budget for contract is not declared to bidders or included in the bid documents
- Eligibility and bid evaluation, and contract award; For these matters, concurrences from the financing institutions are usually secured

Project monitoring and supervision

The growing emphasis on demonstrating performance rather than simply producing output from a project underscores the importance of monitoring. This section explains the need to monitor water supply projects and provides some guidelines on monitoring.

Monitoring²¹ is an essential component of project management and loan supervision (see Box 8). It is an internal management function that involves gathering and use of information to track project implementation. Monitoring provides essential information to guide lenders, managers, implementing units and the beneficiaries in assessing and improving project performance and achieving desired results.

Box 8. What is monitoring?

- ✓ A continuous process of assessing progress of project implementation based on certain established guidelines and benchmarks
- ✓ Identifies the status of a project at any given time (and over time) relative to respective targets and outcomes
- ✓ Measures progress against objectives, indicators and assumptions
- ✓ Measures actual expenditures against the planned budget
- ✓ Identifies problems and potential solutions during implementation

Why monitor projects

Systematic monitoring helps manage associated risks²² in project implementation and ensures achievement of outputs of the project being financed. It is conducted to:

- Track progress indicators towards achieving the desired project objectives and targets
- Identify actual or potential problems as early as possible to facilitate timely adjustments in project implementation
- Check for accountability for project implementation
- Identify needed project changes and ensure optimum use of resources
- Reinforce results/ impact-oriented project management



²¹ Monitoring is part of supervision which connotes a more active involvement in project implementation. Project supervision involves overseeing the project to ensure that planned activities or tasks are carried out and performed correctly. Generally, supervision includes risk assessment and management, monitoring, evaluative review, reporting, and technical assistance activities. Supervision during construction implementation is usually done by the construction or works engineer for the borrower. For lending institutions, supervision of water projects connotes ensuring that the proceeds of any loan are used only for the purposes for which the loan was granted, with due regard to economy and efficiency. Thus, lending institutions supervise the borrower's implementation of a financed project, recognizing that project implementation remains as the borrower's responsibility.

²² Implementation risks include adverse changes in economic factors; incorrect assumptions regarding project logic or sustainability considerations; dissatisfaction on the part of target beneficiaries; breach of legal or contractual responsibility or failure to meet obligations to the project by the borrower or contractor; fraud and deficiencies in financial controls and reporting; and mismanagement. During project implementation, both the lending institution and borrower should update and refine their risk assessment strategies and formulate a risk management plan. When contingencies arise, risk management strategies should be implemented.

In particular, monitoring is a tool for...

...the lending institution to

- a) Determine whether the borrower is carrying out the project with due diligence in conformity with the loan agreement and other legal documents
- b) Check for accountability for project implementation
- c) Ensure that financial targets are met in consonance with physical targets
- d) Recommend changes in project concept or design, as appropriate
- e) Identify risks to project sustainability and recommend appropriate risk management strategies and actions to the borrower.

...the borrower²³ to

- a) Ensure the works are done in accordance with approved design and specifications within a planned timeframe during construction stage
- b) Safeguard the quality of construction, oversee the safety of the works, and ensure that mitigation measures for adverse environmental impacts are put in place
- c) Verify contractor performance and completion of works;
- d) Ensure that the water supply system is functional and meets operational and financial targets and performance standards; and
- e) Identify problems arising during implementation and ways to resolve them in a timely manner.

What monitoring involves

Monitoring involves assessment of progress of implementation at each stage or activity of the project (see Figure 11). The implementation of a water supply project involves four major stages/activities as enumerated below. Lending activities are linked with project activities if financed by a loan.

- **Procurement** involves the acquisition of goods, consulting services, and contracting for infrastructure projects by the procuring entity. In case of projects involving mixed procurements, the nature of the procurement, i.e., goods, infrastructure projects, or consulting services, shall be determined based on the primary purpose of the contract. For water supply projects, procurement includes materials or services for water service connection materials/fittings, well drilling and construction services, water and waste water treatment supply and disposal. Procurement is done by the water district, LGU or private utility undertaking the water supply project.

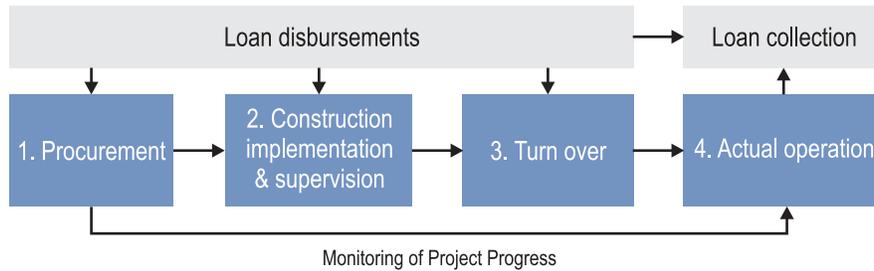
- **Construction supervision** involves coordination of construction activities to ensure that the works are undertaken in accordance with design and specification, safeguard the quality of construction and oversee the safety of the works. Construction supervision is done by a construction supervision consultant, project or works engineer usually contracted under the project by the water district, LGU or private utility.
- **Turn over.** After a complete test run and completion of all works, the water supply system or facility is formally handed by the contractor to the borrowing entity (a water district, LGU or private utility). A certificate of completion and borrower’s final acceptance are prepared by the borrower. These are usually required by the lending institution prior to release of the final loan tranche/progress billing.
- **Actual operation** is the management of operations of the water supply system after construction has been completed. The operations include provision of water/ service connection, billing and collection, water quality testing and systems maintenance and monitoring.

²³The borrower refers to a water district, an LGU or private entity implementing a construction, expansion or rehabilitation of a water supply system. The borrower can set up a project management office (PMO) or a project implementing unit (PIU) which directly implements the project.

Both the borrower and the lending institution should monitor activities at all stages of project implementation. Table 20 identifies the key activities to be monitored during each stage, the documents used to monitor progress, and the unit responsible for carrying out the monitoring. Progress of activities are assessed or verified against

targets and technical or performance standards contained in project documents such as the project proposal/feasibility study/business plan,²⁴ detailed engineering design (DED),²⁵ program of works (POW)²⁶ and implementation schedule.

Figure 11. Stages/activities of a water supply project



²⁴A project proposal or business plan is prepared as a requirement for loan/funding. These documents describe the physical and financial aspects of the project including physical targets, indicators of viability, and outcome or results to be achieved by the project.

²⁵The DED is a detailed review of the project’s feasibility study or preliminary engineering study. If in the course of this exercise it is found that changes would be needed in the design standards of principal features, as proposed, specific recommendations are supported by detailed justifications including their effects on the cost. A schedule of detailed engineering activities is then prepared including survey, site investigation, construction materials investigation, preparation of technical specifications, design plans, quantity, and cost estimates based on the review.

²⁶The program of works is based on the project’s feasibility study/business proposal and DED and indicates the basic works or facilities to be done and the actual corresponding costs.

Table 20: Activities to monitor in a water supply project

Stage/activity	What are monitored		Relevant documents used for verification	Responsible unit	
	Physical	Financial		Borrower	Lender
Procurement	Timing of acquisition, specifications and quantity & quality of materials	Cost of materials, loan disbursements ²⁷	DED, POW, contractors' & suppliers' quotations	WD, LGU or private entity through its Bids and Awards Committee	Loan account officer ²⁸
Construction implementation & supervision	Timing, cost & quality of works	Expenditures, loan disbursements	DED, POW & implementation schedule, progress billing, loan schedule, other documents (sales invoice, delivery receipt, consultant/engineer's report, variation or change order as applicable)	Project Mgt Office (PMO)/ Project Implementing Unit (PIU) of the WD, LGU or private entity; construction supervision consultant or a project or works engineer; contractor	In-house or contracted engineer ²⁹ ; construction supervision consultant or loan account officer (if lender has no in-house engineer or consultant)
Turn over	Timing, test run, completion and quality of works	Expenditures, final loan release	Post-project completion report, certificate of completion, borrower's final acceptance, progress billing, other documents	-ditto-	-ditto-
Actual operation	Service connections, water production (production volume & losses, availability of water per day, system pressure); & water use (water sales, average consumption, billed and unbilled water, leakages, non-revenue water)	Sales, collections, operating expenses, cash flow, status of loan and loan payments, tariff increases, other financial indicators	Audited interim and annual financial statements, monthly operations reports such as the monthly data sheet of water districts, loan amortization schedule	PMO/PIU of the WD, LGU or private entity	Loan account officer

To facilitate monitoring, both the lending institution and the borrower should have a common simple table or bar-chart summarizing important implementation schedules, in comparison with agreed plans and targets. This should

include not only procurement and civil works but also loan disbursements and other project activities. Any major deviation from the agreed schedule should be analyzed and addressed by the responsible units.

²⁷Verification of progress billing through site inspection of works prior to release of every loan tranche should be done.

²⁸Loan account officers of lending institutions may sit as observers during the bidding process for monitoring purposes with the concurrence of the procuring entity.

²⁹Normally, foreign-funded lending programs being administered by banks have their own construction or works consultants; otherwise, banks usually use the reports prepared by the project engineer hired by the borrowers to verify and monitor project loans.

When the project or water system is already operational, the PMO/PIU or the water utility staff and lending institution may agree on certain performance indicators to assess project functionality, efficiency, effectiveness, and sustainability. Ideally, a regulatory body should impose and monitor compliance to these performance standards. Currently, LWUA uses selected performance indicators for water districts based on technical and health standards and industry averages. Some suggested performance indicators for water supply services are found in Table 21.

Monitoring reports

Reports on monitoring activities are prepared by the concerned responsible units. Common project report formats should be agreed upon and understood by both borrower and lender. For lending institutions, the account officer prepares the project report on financial disbursements and physical progress (the latter based on the construction supervisor or works engineer's report) and the portfolio management report (on group

of accounts) based on their reporting periods. Field reports are prepared by the construction supervisor or the project works engineer on a monthly basis. Financial performance is reflected in the financial statements prepared by the project's PMO. For water districts, the monthly data sheet (MDS)³¹ is prepared by the PMO/PIU containing the following data: service connection, water rates, billing and collection data, financial data, status of loan and project construction activities, and institutional-related information.

Monitoring structure and reporting flow

Loan monitoring is done by an assigned loan account officer.³² Reports are submitted by the loan account officer to the loan review or project monitoring board which recommends appropriate risk management actions to the borrower as needed (Figure 12). On the part of the borrower, the construction supervision or project or works engineer during construction stage and the PMO/PIU (water utility staff) are involved in physical and financial monitoring and supervision of the project.

Table 21: Suggested performance indicators

Area of performance	Definition	Key indicators
Functionality of the system	Measures the quantity (and quality) of water services	<ul style="list-style-type: none"> - number of connections established - number of communities, population or households serviced - compliance with safe water and environmental standards - availability of water per day - increased system pressure
Efficiency	Measures the extent to which resources are appropriately used and recovered	<ul style="list-style-type: none"> - number of connections/total cost - non revenue water - production capacity utilized - collection efficiency - operating ratio
Effectiveness	Measures the degree to which services affect outcomes and impacts	<ul style="list-style-type: none"> - % coverage area - decline in waterborne diseases - decline in morbidity or mortality rate
Sustainability	Indicates how the services can be maintained and supported by the project's operations	<ul style="list-style-type: none"> - increased reliability of services (days of continuous service & decrease in number of breakdowns) - customer satisfaction

³¹The MDS is used by the financial institutions (LGUGC, DBP and LBP) as a requirement for loan approval for refinanced loans or projects and as a basis for monitoring project performance. The MDS, prepared by the PMO of the water district, may need to be verified by the lending institution as part of its monitoring activity.

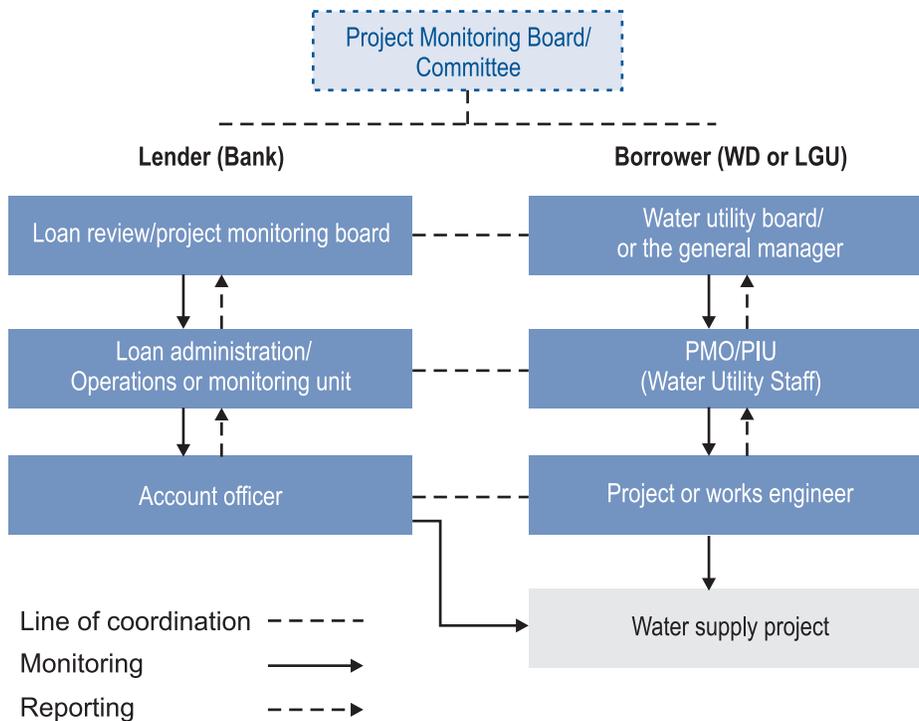
³²"Loan account officer" is a generic term used by lending institutions to refer to staff whose functions may vary from loan soliciting, processing (credit evaluation or appraisal, approval, documentation and release), and monitoring and evaluation. Depending on the organizational structure of the lending institution, these functions may be performed by just one account officer or several from different units. Usually, loan monitoring is done by loan account officers from the loan administration/operations or monitoring unit.

Reports are submitted to the water utility board or the general manager which recommend mitigating measures for substandard or poor performance of works or operations of the water system. Both structures should work in a parallel manner but not independently of each other to ensure the successful operation of the water supply project. A project monitoring board/committee composed of designated bank officers, account officer, the general manager, and project or works engineer, or other concerned entity should be formed to coordinate and review project planning, supervision, monitoring, and reporting activities.³³ It is recommended that the board or committee meet every quarter during the construction or implementation stage and at least every semester for completed and/or operational projects.

Funds for monitoring

It is important that the required resources for monitoring be integrated in the regular operations of the borrower and the lending institution to sustain the conduct of these activities. Sources of funds for monitoring may vary. Normally, monitoring activities are included as overhead cost of lending institutions and the water utilities when the system is already operational. For new or ongoing projects financed by loans, monitoring (and supervision) fees are included in the total project package or tucked in the pricing of fees for financed loans.³⁴

Figure 12. Monitoring structure/s and reporting flow



³³ LGUGC convenes a project monitoring board during the effectivity of the guarantee agreement to monitor project implementation and advise on policy matters.

³⁴ LWUA charges one percent monitoring fee and four percent supervision fees from total project cost. DBP charges five percent monitoring and supervision fee. LBP charges six percent of total loan for monitoring & supervision and deducts P1,000 inspection fee per visit from project loan releases to verify progress billing requests. LGUGC tucks in monitoring costs in the pricing of guarantee fee.

APPENDICES

Appendix 1. LWUA Survey Results: Water District Performance Indicators Industry Average (2006)

	SMALL	AVERAGE	MEDIUM	BIG	LARGE	VERY LARGE	OVER ALL
PROFITABILITY							
1	6	14	9	15	10	23	10
2	15	13	16	7	14	8	13
3	31	37	35	31	35	40	33
4	250	375	371	818	404	840	420
5	1,317,601	2,405,084	6,652,984	7,107,231	29,322,451	48,364,037	6,719,853
6	3	12	10	11	9	21	8
7	2	9	5	11	6	16	6
8	31,714	220,742	185,480	908,384	1,302,091	9,281,062	671,789

- 1 Net Income / Operating Revenues
- 2 Interest Expense / Operating Revenues
- 3 Internal Cash Ratio
- 4 Debt Service Ratio
- 5 Debt Service
- 6 Net Income / Net UPIS
- 7 Return on Fixed Assets
- 8 Net Income / Month

COST CONTROL							
1	75	69	78	78	77	78	76
2	328,873	708,224	1,901,719	4,527,332	12,303,357	45,169,638	3,434,165
3	302	276	316	353	398	443	321
4	19	16	16	15	18	15	17
5	161	137	142	110	131	145	143
6	71	64	34	34	34	42	52
7	8	11	13	10	9	16	10
8	1,671,282	3,651,489	8,205,087	18,084,914	55,778,347	59,639,668	11,247,962

- 1 Operating Ratio
- 2 Operating Expense / Month
- 3 Operating Expense / Conn / Month
- 4 Operating Expense / M3 Billed
- 5 Admin. & Gen. Exp / Conn / Month
- 6 Admin. & Gen. Exp / Operating Exp
- 7 Maintenance Exp / Operating Expense
- 8 Other Operations & Maintenance Exp

MARKETING EFFORT							
No.	1,305	3,021	6,430	12,851	30,381	81,116	8,707
P	420,619	1,293,267	2,398,212	5,913,548	15,824,824	55,896,108	4,401,370
P	349	411	395	460	510	560	402
P	26	24	20	21	24	19	23
M3	16	18	20	22	22	29	19
M3	20,880	52,043	130,122	290,687	717,715	2,345,508	203,799
P	329	399	378	442	495	581	385
P	21	23	20	20	23	27	21

- 1 Ave. Active Service Connection
- 2 Operating Rev / Month
- 3 Operating Rev / Conn / Month
- 4 Operating Rev / M3 Billed
- 5 M3 Billed / Conn / Month
- 6 M3 Billed / Month
- 7 Monthly Billing per Connection
- 8 Peso Billing per cu. M. Billed

	SMALL	AVERAGE	MEDIUM	BIG	LARGE	VERY LARGE	OVERALL
COLLECTION EFFORT							
1 Average Collection Period	76	37	34	33	50	47	52
2 On time Payment	62	83	64	64	66	80	63
3 Collection Efficiency	89	94	95	93	93	92	92
4 Collection Ratio	88	92	69	98	87	87	90
5 Peso Collection - Current Year's Sales	4,560,612	14,378,688	26,626,981	63,647,141	171,122,122	508,222,324	45,169,318
6 Peso Collection - Previous Year's Sales	301,857	501,433	1,182,220	3,533,895	5,381,520	21,803,619	2,004,379

%	84	72	52	36	58	36	63
%	82	80	87	36	54	38	72
%	77	73	52	36	57	40	61
%	538	369	695	390	432	415	522
%	2	7	10	7	5	9	6
%	157	229	83	65	188	75	129

No.	1,308	3,029	6,424	12,834	31,198	98,274	9,215
%	20	27	26	26	31	34	24
%	68	67	79	70	68	93	71
P	3	2	2	3	3	2	2.63
P	0.23	0.12	0.34	0.27	0.21	0.17	0.25
P	2.41	2.11	2.39	2.67	2.81	2.15	2.44
P	2.79	2.68	2.46	4.00	3.58	2.78	2.97
P	55	68	61	118	115	115	75
%	18	22	20	33	29	33	23
M3	341,318	877,291	2,208,000	4,722,033	12,946,957	41,542,468	3,507,592

No.	12	20	38	72	170	472	52
No.	121	143	179	187	192	167	155
P	10,560	10,619	142,982	15,488	15,046	13,572	43,813
%	36	36	28	26	21	20	31

No. of WDs this Industry Average	58	15	36	27	9	4	149
No. of WDs in each category as of Dec. 31, 2006	290	41	61	58	13	7	468
Percentage of Sample WD this Industry Average	20%	37%	59%	48%	69%	57%	32%

FINANCIAL POSITION							
1 Total Debt / Total Assets	84	72	52	36	58	36	63
2 Loans Payable / Fixed Assets	82	80	87	36	54	38	72
3 Total Debt / (Total Debts + Total Equity)	77	73	52	36	57	40	61
4 Current Ratio	538	369	695	390	432	415	522
5 Net Income / Total Assets	2	7	10	7	5	9	6
6 Long Term Debt / Total Equity	157	229	83	65	188	75	129

PRODUCTION EFFICIENCY							
1 Metered Service Connection	1,308	3,029	6,424	12,834	31,198	98,274	9,215
2 Non-Revenue Water	20	27	26	26	31	34	24
3 Production Capacity Utilized	68	67	79	70	68	93	71
4 Pumping Exp / M3 Produced	3	2	2	3	3	2	2.63
5 Treatment Exp / M3 Produced	0.23	0.12	0.34	0.27	0.21	0.17	0.25
6 Fuel Purchased for Pumping / M3 Produced	2.41	2.11	2.39	2.67	2.81	2.15	2.44
7 Total Prodn Exp / M3 Produced	2.79	2.68	2.46	4.00	3.58	2.78	2.97
8 Total Prodn Exp / Conn / Month	55	68	61	118	115	115	75
9 Total Prodn Exp / Operating Expense	18	22	20	33	29	33	23
10 M3 Produced	341,318	877,291	2,208,000	4,722,033	12,946,957	41,542,468	3,507,592

PERSONNEL MANAGEMENT							
1 Ave. No. of Employees	12	20	38	72	170	472	52
2 Active Service Conn / Employee	121	143	179	187	192	167	155
3 Ave. Payroll / Empl / Month	10,560	10,619	142,982	15,488	15,046	13,572	43,813
4 Ave. Payroll / Empl / Operating Exp	36	36	28	26	21	20	31

Note: This summary table consists of 149 sample water districts; 89 of which are included in the 2005 Water District Industry Average

Appendix 2.A. Scoring System for Creditworthiness Classification of Water Districts

Classification	CW	Semi-CW	Pre-CW	Non-CW	
Total Weighted Score>	8.5-10	5.5-8.4	3.0-5.4	0-2.9	Weight (%)
Points >	10	6	3	0	
Financial:					50
Current Ratio	If CR>2.0	If CR >1.2 but < 2.0	If CR > 0.9 but < 1.2	If CR is <0.9	20
Debt Service Ratio	If DSR > 2.3	If DSR > 1.2 but < 2.3	If DSR > 0.9 but < 1.2	If DSR <.09	20
Net Profit Ratio	If NPR > 0.08	If NPR >.05 but < .08	If NPR > .03 but < .05	If NPR <.03	5
Debt Equity Ratio	If DER <0.75	If DER > .75 but < .85	If DER >.85 but < 1.0	If DER > 1.0	5
Operational:					50
Collection Ratio	If CR > 87%	If CR > 78% but < 87%	If CR > 70% but < 78%	If CR < 70%	20
Non-revenue water	If NRW < 25%	If NRW > 25% but < 45%	If NRW > 45% but < 55%	If NRW > 55%	20
Service connection/ staff	If SR > 120	If SR > 100 but < 120	If SR > 80 but < 100	If SR < 80	10

Appendix 2.B. Classification results (as of 2008)

LUZON				
Water districts	Creditworthy	Semi-creditworthy	Pre-creditworthy	Non-creditworthy
Very large		Dasmariñas Quezon Metro		
Large	Metro Lipa	Baguio City Ilocos Norte Angeles San Fernando (Pampanga) San Jose DM Tarlac Laguna		
Big	Baliuag Bustos Cabanatuan Camiling Concepcion Floridablanca Hagonoy Plaridel Calumpit San Pablo San Pedro Silang Tagaytay Sta. Cruz Tanza Trece Martires Metro Naga	Dagupan City La Union Metro Tuguegarao Mariveles Orani Talavera Batangas City Calamba Gen. Mariano Alvarez Lemery Morong Nasugbu Puerto Princesa San Jose Tanauan Tanay Camarines Norte Legazpi City Sorsogon Tabaco City Virac	Meycauayan	
Average	Rosales Hermosa Teresa (Rizal)	Bayambang Metro Vigan Gen Tinio Guimba Marilao Obando Moncada Alaminos Tiaong Taal Ligao City Bulan	San Carlos City Candaba	Ilagan Metro Lingayen

LUZON				
Water districts	Creditworthy	Semi-creditworthy	Pre-creditworthy	Non-creditworthy
Small	Bani	Alcala	Angadanan	Agoo
	San Manuel	Aparri	Balaoan	Alicia
	Sanchez Mira	Asingan	Batac	Gonzaga
	Villasis	Balungao	Diffun	Narvacan
	Ramos	Basista	Penablanca	Ramon
	San Felipe	Binalonan	Rosario	Urbiztondo
	Palauig	Bugallon	San Manuel	Dipaculao
	Silang	Claveria	San Quintín	San Narciso
	Siniloan	Dingras	Sinait	Infanta
	Bacacay	Metro Tayug	Sta. Lucia	Roxas (Or. Mindoro)
	Ragay	Naguilian	Tagudin	Balatan
		Pozorrubio	Umingan	Camalig
		Roxas	Dolores	Pandan
		San Nicolas	Cuyapo	Masbate_Mobo
		Sarrat	Gen Natividad	
		Sta. Maria (Pang)	Candelaria (Zambales)	
		Bayambang	Sta. Ignacia (Tarlac)	
		Balagtas	Castillejos	
		Bongabon	Macabebe	
		Cabangan	Talavera (N. Ecija)	
		Cabiao	San Antonio (N. Ecija)	
		Gerona	Cabuyao	
		Iba	Dolores	
		Jaen	Guinyangan	
		Limay	Lobo	
		Masantol	Naujan	
		Mayantoc	Pinamalayan	
		Palayan	Aroroy	
		Agoncillo	Calabanga	
		Amadeo	Casiguran	
		Alitagtag	Donsol	
		Atimonan	Paracale	
		Balayan	Pasacao	
		Calauag	Pilar	
		Catanuan	San Andres	
		Gen. E. Aguinaldo	Irosin	
		Lopez		
		Mabini		
		Mauban		
		Odiongan		
		Pakil		
		Pola		
		Romblon		
		Rosario		
	Roxas (Palawan)			
	Sablayan			
	Tagkawayan			
	Tuy			
	Baao			
	Bato (Cam Sur)			
	Libmanan			
	Sipocot			
	Viga			
	Jose Panganiban			
	Bato (Catanduanes)			

LUZON				
Water districts	Creditworthy	Semi-creditworthy	Pre-creditworthy	Non-creditworthy
Medium	Alaminos La Trinidad Mangaldan Angat Bocaue Bulacan Dinalupihan Guagua Lubao Munoz (N.E.) Peñaranda San Ildefonso San Miguel Subic Sta. Rosa Mendez Pagsanjan Pililla	Daraga Gubat Iriga City Pili Indang Maragondon San Juan (Batangas) Balanga Norzagaray San Rafael San Jose City Sta. Maria (Bulacan) Bangued Binmaley Urdaneta	Manaoag	Santiago City

VISAYAS				
Water districts	Creditworthy	Semi-creditworthy	Pre-creditworthy	Non-creditworthy
Very large		Metro Iloilo Metro Cebu	Bacolod City	
Large	Metro Kalibo	Dumaguete City Leyte Metro		
Big			Metro Roxas Catbalogan	
Average		Kabankalan Sagay Silay City Talisay Dumangas-Barotac-Nuevo	Silay City Metro Hilongos	
Medium	Baybay (Leyte)	Pandan Bogo Maasin Naval Carcar	La Carlota City Calbayog Metro Carigara Toledo City	
Small	Sogod (Leyte)	Buenavista Calimog Patnongon Sibalom Tobias-Fornier Bais City Bayawan Catarman Clarín Dalaguete Isabel Pinamungajan San Jose (No. Samar) Simulan Talibon	Banate Bugasong Estancia Libacao Borongon San Isidro Metro Siquijor	Ajuy Concepción (Iloilo) Numancia (Aklan) Sipalay Abuyog Gen. McArthur

MINDANAO				
Water districts	Creditworthy	Semi-creditworthy	Pre-creditworthy	Non-creditworthy
Very large		Davao City Zamboanga City		
Large		Metro Kidapawan Cagayan de Oro City	Butuan City	
Big	Surigao Metro Valencia City Digos City Tagum Dipolog City Pagadian City	Gingoog City Malaybalay Cotabato City	Misamis Occidental	Jolo Mainland
Average		Maramag Nasipit Tandag Nabunturan Metro Midsayap Panabo Kapatagan	Bongao Polomok	Marawi City
Medium	Sultan Kudarat	Bayugan Bislig City Gen Santos City Dapitan City Isabela City		
Small	Don Carlos Kibawe Placer	Cantilan Del Carmen Mambajao Manolo Fortich Prosperidad Wao Antipas Kiblawan Lupon Mati Mlang New Corella Tupi Pikit Bacolod Lanao del Norte Kolambugan Lamitan Polanco Rizal Rizal Tangub City Wao	Claveria (Misamis Or) Island Garden City of Samal Norala Surallah Kauswagan Pres. M. A. Roxas Tubod-Baroy Sindangan Tukuran	Ipil-Titay Kumalarang Liloy Siocon Kalamansig Pigcawayan Bacuag (Sur. Del Sur) Balingasag (Misamis Or)
Total	63	182	69	33

Appendix 2.C. Rating system for water districts in the Philippines

Basics of Credit Rating

What is credit rating?

Credit rating is a current opinion on credit quality of the debt in terms of a water district's (issuer) ability and inclination to meet its debt obligation in a timely manner, and an independent & unbiased evaluation of the creditworthiness of the water district and its relative position vis-à-vis its peers and other corporate borrowers.

As observed in the definition, it focuses on both the ability and the inclination (or willingness) of the water district to service its debt obligations. While the credit rating model and analysis focus mainly on the ability of water district, the inclination of the water district is gauged by the management's quality.

What a credit rating is not?

Credit rating is not a general purpose evaluation of issuer; it is neither an audit of water district nor a one time assessment of creditworthiness of the issuer valid over the future life of loan. Most importantly, it should not be perceived as a recommendation to extend or not extend loan to a water district. Instead, credit rating helps in making an informed credit decision backed by an understanding of underlying credit risks.

What are the benefits of credit rating of water districts?

Apart from the targeted objective of this assignment, namely evaluation and pricing of credit risks in the guarantees provided by LGUGC, the credit rating of water districts is a useful tool. The use of credit rating should be advocated as a cornerstone in the development of the debt market in the Philippines.

Various benefits of credit rating of water districts are given below:

- Helps in credit history formation;
- Will improve visibility & bankability with development institutions;
- Will facilitate flow of capital to water districts;
- Is indicative of improved governance and transparency in WD sector;
- Helps in benchmarking among WDs and with corporate entities;
- Facilitates independent monitoring of overall debt level & financial risks; and
- Will facilitate accessibility to funds from the bonds market in the long-term.

Credit Rating Process

Step 1: Information requirements furnished by the rating team

The credit rating process commences with the rating team identifying the information requirements and communicating the same to the water district. This will help the officials to be sensitized to the data and information required for their credit rating. The importance of information should also be explained to the management of the water district.

Step 2: Data provided by the rated entity

The water district should submit the data in the standard data sheet. While all efforts should be made to ensure completeness of the information, there may be instances wherein some of the information are not available. In such a situation, the rating team has to make suitable assumptions for the parameter.

Step 3: Analysis of the information using credit rating model

Once the information is received, the rating team will undertake analysis of the information, based on the credit rating model. The analysis can be supplemented by further evaluation of financial projections and projects proposed by the water district.

Step 4: Management interaction

The management interaction is aimed at gaining insights into various analytical aspects as well as management evaluation of water district.

Step 5: Preparation of the rating report

The rating report comprises of the background of water district, filled-in scoring sheet that assigns the credit rating, peer-benchmarking, rating report to put in public domain and annexes on data provided by the water districts.

Step 6: Presentation to the rating committee

The rating report outlining credit scores and overall rating should be presented to the rating committee.

Step 7: Credit rating assigned by the rating committee

The rating committee assigns the final rating after discussing the credit score assigned by the rating team. Deviations, if any, to the rating assigned by the rating model can be undertaken only after due explanation for the same.

Credit Rating Criteria

Credit rating framework

The credit rating framework for water districts involves an evaluation of five broad credit risk factors as shown below.

Credit Risk factors

Regulatory risk

Analysis of the regulatory framework is based on the various laws and presidential directives governing the water districts.

Economic risk

The economic base of the water district's service area is analyzed to assess the revenue base, elasticity of revenues, and the possibility of enhancing the WD's revenue base and revenue-generating potential.

Financial risk

Financial risk analysis focuses on past financial performance to assess the future performance of the entity. The analysis is based on the audited financial results and is undertaken

for individual parameters, including debt factors, accounts receivable, liquidity, and net revenues available for debt service.

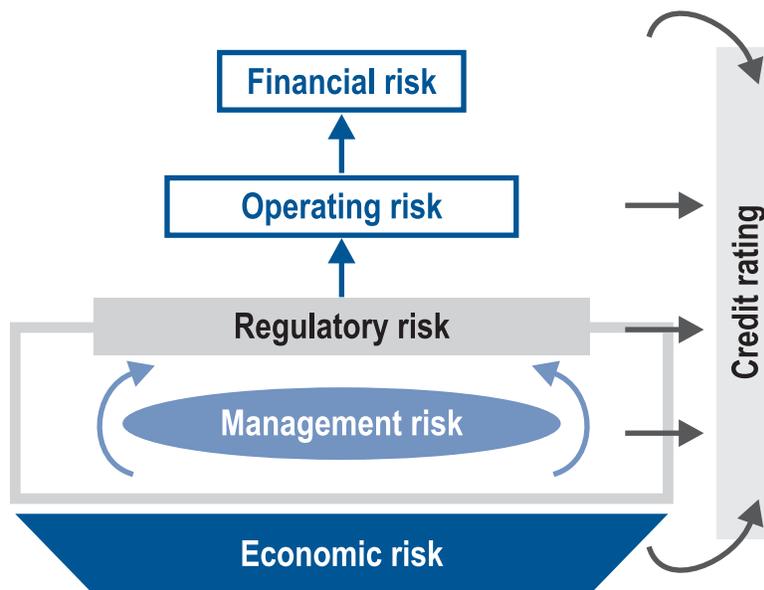
Operating risk

The analysis of operating efficiency takes into account the concentration risk and existing infrastructure facilities.

Management risk

A key parameter for assessing a water district's credit profile is the quality of its economic management and project management. A water district's financial health is, to a large extent, linked to the initiatives its management has taken to enhance its resource base and improve the level of its services. The assessment revolves around the degree of effectiveness and efficiency exhibited by the management in harnessing the available resources and providing adequate infrastructure in its service area.

While assessing projects, it is important to analyze the revenue inflows arising out of improvements envisaged through the project, the project cost, the means of funding the project, and the effect of debt funding on the water district's debt service coverage ratio.



Rating Committee

The Rating Committee is comprised of experts who bring long standing experience in diverse companies and industrial sectors. Rating Committee Meetings (RCMs) form a crucial part of a rigorous exercise of assigning a credit rating. The RCM process ensures objectivity of the rating, since the decision results from the collective thinking of the think-tank that comprises experts. The RCM process also ensures high analytical quality and consistency since the reports and discussions are focused on critical rating factors that are relevant to a particular issuer. Accordingly, by drawing on the knowledge and expertise of the participants, the RCM decides on the individual ratings recommended by the rating team.

Credit Rating Scale

The rating scale is an 18-point scale to enable the wide distribution of rated entities. Credit rating scale varies from AAA to D category, where AAA rating belongs to highest degree of safety and D rating refers to default. Categories from AA to B have modifiers '+' and '-' suffixed.

Surveillance

Frequency

The rating is kept under surveillance after the initial rating is assigned and during the entire time the loan guarantee is in force. The minimum frequency of surveillance should be one year when the latest financial results of the water district are available, though the rating should be reviewed as and when there is any event that can potentially impact the credit rating.

Process

The process for credit rating review is similar to the initial rating assigned, though the emphasis of the exercise would largely be to obtain an update on the existing information and analysis. The rating team should undertake a continuous, monitoring process to ensure that it is completely aware of the internal and external events that can affect the credit rating of the water district. The surveillance process should involve regular interaction with the key officials of the water district as well as with the external experts of the water sector.

The possible outcomes of rating review can be 'change in rating', 'outlook change' or 'credit watch'.

Investment Grade Ratings	
AAA	(Triple A) Highest Safety Entities rated 'AAA' are judged to offer the highest degree of safety with regard to timely payment of financial obligations.
AA	(Double A) High Safety Entities rated 'AA' are judged to offer a high degree of safety with regard to timely payment of financial obligations.
A	Adequate Safety Entities rated 'A' are judged to offer an adequate degree of safety with regard to timely payment of financial obligations. However, changes in circumstances can adversely affect such entities more than those in the higher rating categories.
BBB	(Triple B) Moderate Safety Entities rated 'BBB' are judged to offer a moderate safety with regard to timely payment of financial obligations for the present; however, changing circumstances are more likely to lead to a weakened capacity to pay interest and repay principal than for entities in higher rating categories.
Speculative Grade Ratings	
BB	(Double B) Inadequate Safety Entities rated 'BB' are judged to carry inadequate safety with regard to timely payment of financial obligations; they are less likely to default in the immediate future than other speculative grade entities, but an adverse change in circumstances could lead to inadequate capacity to make payment on financial obligations.
B	High Risk Entities rated 'B' are judged to have greater likelihood of default; while currently financial obligations are met, adverse business or economic conditions would lead to lack of ability or willingness to pay interest or principal.
C	Substantial Risk Entities rated 'C' are judged to have factors present that make them vulnerable to default; timely payment of financial obligations is possible only if favorable circumstances continue.
D	Default Entities rated 'D' are in default or are expected to default on scheduled payment dates. Such entities are extremely speculative and returns from these entities may be realized only on reorganization or liquidation.

'+' (plus) or '-' (minus) signs can be added for ratings from 'AA' to 'B' to reflect comparative standing within the category.

Credit rating outlook

The credit rating outlook can be assigned by the Rating Committee for ratings from 'AAA' to 'B', based on their assessment of future financial projections or expected improvement in operating parameters.

The outlook is assigned at the time of initial rating and is reviewed whenever the credit rating is reviewed. Ratings on credit rating watch will not carry outlooks. A rating outlook indicates the direction in which a rating may move over a medium-term horizon of one to two years. A rating outlook can be 'Positive', 'Stable' or 'Negative'. The default credit rating outlook will always be 'Stable'.

A 'positive' or 'negative' rating outlook is not necessarily a precursor of a rating change, however it provides investors an early indication of possible direction of rating change.

Positive outlook means that a rating may be raised.

Negative outlook means that a rating may be lowered.

Stable outlook means that a rating is not likely to change.

Credit rating watch

The credit rating can be put on watch by the Rating Committee in case there are events or circumstances (such as mergers and acquisitions, shareholding change, regulatory actions), the impact of which on outstanding rating needs to be evaluated with further information. The credit rating watch should be typically resolved within a 3 to 6 months timeframe.

Difference between credit rating watch and outlook

A credit rating watch is assigned only when there is an uncertainty on the assignment of exact credit rating. Accordingly, until the clarity on the credit rating emerges, the rating is put under watch. A credit rating is under watch only after some exceptional, uncertain events have taken place. Under normal circumstances, a credit rating watch will not be imposed.

An outlook is assigned for all ratings, under normal circumstances. When a rating watch is assigned, an outlook is not applicable.

Appendix 3. List of LGUs operating water utilities with borrowing capacity of P60 million and above (as of 2008)

Provinces	Municipality	Population (2000)	Internal Revenue Allotment	Debt Service Limit (20%)	Borrowing Capacity (IRA * 20) *5.65	Income Class
Lanao del Norte	Iligan City	285,061	573,204,736	114,640,947	647,721,352	1st
Negros Occidental	San Carlos City	118,259	325,079,170	65,015,834	367,339,462	2nd
Negros Occidental	Sipalay	62,063	256,782,874	51,356,575	290,164,648	4th
Laguna	Sta. Rosa	185,633	248,893,123	49,778,625	281,249,229	1st
Cebu	Danao City	98,781	198,299,314	39,659,863	224,078,225	3rd
Negros Oriental	Canlaon City	46,548	178,299,025	35,659,805	201,477,898	4th
Bohol	Tagbilaran City (Capital)	77,700	163,586,707	32,717,341	184,852,979	3rd
Laguna	Biñan	201,186	136,753,274	27,350,655	154,531,200	1st
Cavite	Trece Martirez City	41,653	132,369,114	26,473,823	149,577,099	4th
Rizal	Binangonan	187,691	131,654,415	26,330,883	148,769,489	1st
Davao Oriental	Mati (Capital)	105,908	111,345,385	22,269,077	125,820,285	-
Agusan del Sur	Esperanza	44151	106,021,292	21,204,258	119,804,060	-
Compostela Valley	Monkayo	85,830	94,508,869	18,901,774	106,795,022	1st
Bukidnon	Quezon	82,567	94,474,553	18,894,911	106,756,245	1st
Davao del Norte	Kapalong	57,966	88,327,676	17,665,535	99,810,274	1st
Pangasinan	Malasiqui	113,190	87,931,924	17,586,385	99,363,074	1st
Compostela Valley	Laak	59,450	85,657,852	17,131,570	96,793,373	1st
Camarines Sur	Libmanan	88,476	85,507,935	17,101,587	96,623,967	1st
Negros Oriental	Guihulngan	84,607	84,114,186	16,822,837	95,049,030	-
Isabela	Echague	61,101	83,019,873	16,603,975	93,812,456	1st
Maguindanao	Parang	60,935	82,984,083	16,596,817	93,772,014	3rd
Negros Occidental	Calatrava	74,623	82,672,741	16,534,548	93,420,197	1st
Agusan del Sur	Prosperidad (Capital)	70815	80,843,213	16,168,643	91,352,831	-
Bukidnon	Talakag	48,326	80,207,216	16,041,443	90,634,154	1st
Laguna	Cabuyao	106,630	78,567,732	15,713,546	88,781,537	1st
Bukidnon	Manolo Fortich	74,252	78,402,686	15,680,537	88,595,035	1st
Maguindanao	Datu Odin Sinsuat	71,569	76,124,452	15,224,890	86,020,631	-
Davao del Norte	Santo Tomas	84,367	74,493,648	14,898,730	84,177,822	1st
Davao del Sur	Santa Cruz	67,317	69,920,190	13,984,038	79,009,815	1st
Compostela Valley	Maco	65,181	68,646,039	13,729,208	77,570,024	1st
Isabela	Jones	39,001	68,442,930	13,688,586	77,340,511	2nd

Provinces	Municipality	Population (2000)	Internal Revenue Allotment	Debt Service Limit (20%)	Borrowing Capacity (IRA * .20) * 5.65	Income Class
Albay	Guinobatan	71,071	68,274,072	13,654,814	77,149,701	1st
Negros Oriental	Siaton	64,258	68,175,138	13,635,028	77,037,906	2nd
Camarinés Sur	Buhi	67,762	66,540,497	13,308,099	75,190,762	2nd
Cebu	Naga	80,189	66,190,519	13,238,104	74,795,286	-
Agusan del Sur	Trento	41,696	65,348,539	13,069,708	73,843,849	-
Bohol	Ubay	59,827	65,282,458	13,056,492	73,769,178	2nd
Cebu	Balamban	59,922	64,905,948	12,981,190	73,343,721	1st
Davao Oriental	Caraga	33,481	63,958,062	12,791,612	72,272,610	2nd
Compostela Valley	Compostela	61,667	63,591,758	12,718,352	71,858,687	1st
Marinduque	Sta. Cruz	60,055	62,891,837	12,578,367	71,067,776	1st
Albay	Polangui	70,451	62,571,051	12,514,210	70,705,288	1st
Negros Occidental	Murcia	59,358	62,555,057	12,511,011	70,687,214	1st
Quezon	Mulanay	45,903	60,132,797	12,026,559	67,950,061	2nd
Pangasinan	Bolinao	61,068	58,509,552	11,701,910	66,115,794	3rd
Apayao	Conner	20,429	58,434,703	11,686,941	66,031,214	3rd
Agusan del Sur	Sibagat	28,685	57,428,476	11,485,695	64,894,178	2nd
Davao Oriental	Governor Generoso	42,705	56,893,922	11,378,784	64,290,132	3rd
Samar	Paranas (Wright)	27,926	56,337,835	11,267,567	63,661,754	-
Zamboanga del Norte	Sergio Osmeña, Sr.	27,500	56,221,887	11,244,377	63,530,732	-
Pangasinan	Bugallon	57,445	55,915,579	11,183,116	63,184,604	3rd
Zamboanga Sibugay	Tungawan	33,194	55,274,267	11,054,853	62,459,922	3rd
Davao del Norte	Asuncion	46,910	55,187,764	11,037,553	62,362,173	2nd
Davao Oriental	Manay	36,697	54,910,121	10,982,024	62,048,437	2nd
Bukidnon	Lantapan	42,383	54,222,810	10,844,562	61,271,775	3rd
Leyte	Buraen	47,180	53,996,381	10,799,276	61,015,911	2nd
Cebu	Barili	57,764	53,167,017	10,633,403	60,078,729	3rd
Marinduque	Boac	48,504	53,120,725	10,624,145	60,026,419	2nd

Appendix 4. Retawon City Case Study

I. Case Study: Financial Modeling & Forecasting

Retawon City Water District (RCWD)

City of Retawon, Visayas Region

Urban Population: 335,215

Estimated Population Served as of 2007: 93,886

Estimated Urban Population Growth Rate: 3.1% per annum

To finance its Water Service Improvement Program, RCWD approached your institution to borrow P139.4 million. The balance sheet of RCWD, as of end-September 2007 is shown below:

Retawon City Water District (RCWD)	
Balance Sheet, as of September 2007 (Php'000)	
Cash and equivalents	25,124
Accounts Receivable (net)	37,213
Inventory	10,522
Fixed Assets (net)	87,211
Others Assets	234
Total Assets	160,304
Account Payables	12,222
Loans - LWUA	23,158
Total Liabilities	35,380
Total Capital Funds	124,924

The RCWD District Finance Officer presented a summary table of the operating and financial statistics shown in Annex 4.A. From your discussions, the bank account officer gathered that subscribers have been constantly complaining about poor service. A quick estimate of the account receivables, amounting to P36.9 million, shows that it is equivalent to 114 days of sales. Annual revenues are estimated to reach P138.6 million in 2007 from P118.7 million in 2006 year after the implementation of a 13 percent tariff hike in February 2006.

The Finance Officer presented the financial plan to the bank, which shows how RCWD can sufficiently service the additional debt. The financial plan assumes following:

- 1) A projected increase in connections of 792 net additional connections per year in the next 5 years. The RCWD Head of Marketing says Retawon has undertaken a survey showing there are around 13,390 households willing to connect to the Water District.
- 2) An average annual increase of 10 percent on tariff rates for the next three years, to enable sufficient debt service coverage of the additional loan. Annual tariff increase for 2011-2014 and 2015-2020 is estimated at 6 percent and 3 percent, respectively. The bank was given a copy of the table of tariffs (Annex 4.B) in the Visayas Region compiled by LWUA, to allow comparison of RCWD rates with the other cities in the region.
- 3) Cost of production is forecasted by the RCWD Technical Group to decline in the next 3 years as the new source will benefit from transmission of water by gravity. (See cost data in Annex 4.A). This claim was verified by an independent engineering consultant.
- 4) The RCWD Technical Group estimated that the Water District has to invest around P5.3 million every two years starting 2010 to maintain its level of service. (See schedule of maintenance capex in the statement of cash flows – Annex 4.A.)
- 5) The Finance Officer assumed in his forecasts that the term of the loan is 10 years (inclusive of a 3-year grace period on principal payments) with an interest rate of 10.5 percent fixed over the entire life of the loan.

Appendix 4.A. Retawon City Water District

I. Selected Operational and Financial Data

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Estimated Population Served	91,069	93,886	98,004	102,123	106,241	110,360	114,478	118,596	122,715	126,833	130,952	135,070
Number of Connections (net of disconnections)	17,513	18,055	18,847	19,639	20,431	21,223	22,015	22,807	23,599	24,391	25,183	25,975
Increase in Number of Connections	525	542	792	792	792	792	792	792	792	792	792	792
Consumption per Connection per month	23.4	22.8	23.7	25.8	26.5	27.8	28.1	29.9	31.6	30.9	30.2	29.6
Billed Water (cu. m.)	4,917,749	4,939,848	5,360,087	6,080,234	6,497,058	7,079,993	7,423,458	8,183,152	8,948,741	9,044,183	9,126,319	9,226,320
Non Revenue Water (NRW)	58%	60%	57%	56%	54%	53%	51%	47%	42%	42%	42%	41%
Total Water Demand	11,708,925	12,349,620	12,465,318	13,818,715	14,124,039	15,063,814	15,149,914	15,439,909	15,428,863	15,593,419	15,735,033	15,637,831
Water Supply Capacity:												
Average Monthly Bill per Connection (Php)	543.0	615.0	676.5	744.2	818.6	867.7	919.7	974.9	1,033.4	1,064.4	1,096.4	1,129.2
Increase in Monthly Bill	6%	13.3%	10.0%	10.0%	10.0%	6.0%	6.0%	6.0%	6.0%	3.0%	3.0%	3.0%
Direct Production Cost (Php per cu. m.)												
Water Supply Expenses	0.39	0.40	0.40	0.41	0.41	0.42	0.42	0.42	0.43	0.43	0.44	0.44
Pumping Expenses	3.40	3.70	3.33	3.00	2.85	2.82	2.71	2.62	2.68	2.73	2.79	2.84
Water Treatment Expenses	0.19	0.20	0.21	0.22	0.24	0.25	0.27	0.28	0.30	0.32	0.34	0.36
Transmission and Distribution Expenses	1.60	1.70	1.80	1.91	2.02	2.15	2.28	2.41	2.56	2.71	2.87	3.04
Total Cost of Producing Water (Php per cu. m.)	5.58	6.00	5.75	5.54	5.52	5.63	5.67	5.74	5.96	6.19	6.43	6.69
Collection Efficiency	87.5%	89.0%	91.0%	92.0%	92.0%	93.0%	93.0%	93.0%	93.0%	93.0%	93.0%	93.0%
Days Collection	113	134	147	155	163	172	180	188	195	207	218	228

II. Income Statement (Php)	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Operating Revenues												
Water Sales	114,116,989	133,245,900	152,999,946	175,372,342	200,689,218	220,976,992	242,976,817	266,821,103	292,651,988	311,547,815	331,314,004	351,985,772
Other Revenues												
Penalty Charges	3,698,888	5,164,593	6,541,592	7,944,571	9,550,084	11,096,923	12,797,761	14,665,509	16,714,073	18,894,907	21,214,106	23,678,006
New Connection Fees	2,101,602	2,166,600	3,168,000	3,168,000	3,168,000	3,168,000	3,168,000	3,168,000	3,168,000	3,168,000	3,168,000	3,168,000
Total Revenues	119,917,478	140,577,093	162,709,538	186,484,913	213,407,303	235,241,915	258,942,578	284,654,612	312,534,061	333,610,722	355,696,110	378,831,778
Annual Water Production	11,708,925	12,349,620	12,465,318	13,818,715	14,124,039	15,063,814	15,149,914	15,439,909	15,428,863	15,593,419	15,735,033	15,637,831
Production and Maintenance Expenses	65,359,222	74,097,720	71,650,649	76,554,020	77,995,780	84,863,902	85,884,318	88,695,293	92,002,315	96,558,307	101,221,792	104,547,920
Water Supply Expenses	4,589,899	4,939,848	5,035,989	5,638,588	5,820,805	6,270,186	6,369,085	6,555,910	6,616,732	6,754,175	6,883,670	6,909,557
Pumping Expenses	39,810,346	45,693,594	41,509,509	41,414,687	40,213,258	42,460,050	40,994,628	40,525,953	41,306,901	42,582,406	43,828,508	44,428,914
Water Treatment Expenses	2,248,114	2,469,924	2,642,647	3,105,342	3,364,391	3,803,544	4,054,801	4,380,361	4,639,861	4,970,708	5,316,801	5,600,995
Transmission and Distribution Expenses	18,710,863	20,994,354	22,462,503	26,395,403	28,597,326	32,330,122	34,465,805	37,233,069	39,438,820	42,251,018	45,192,812	47,608,454
Gross Profit	54,558,256	66,479,373	91,058,889	109,930,893	135,411,522	150,378,013	173,058,259	195,959,319	220,531,746	237,052,415	254,474,318	274,283,858
Administrative and Customer Expenses	56,255,886	59,815,561	66,922,930	80,363,650	102,223,056	104,114,563	111,697,914	112,824,838	151,530,653	177,433,613	186,370,525	195,344,890
Salaries and Wages	47,941,202	51,400,877	58,404,246	65,463,805	87,210,725	88,985,247	96,446,932	97,447,325	136,021,546	161,787,649	170,582,231	179,408,571
Provision for Bad Accounts	2,500,000	2,600,000	2,704,000	2,812,160	2,924,646	3,041,632	3,163,298	3,289,829	3,421,423	3,558,280	3,700,611	3,848,635
Depreciation Expenses	5,814,684	5,814,684	5,814,684	12,087,684	12,087,684	12,087,684	12,087,684	12,087,684	12,087,684	12,087,684	12,087,684	12,087,684
Net Operating Income	(1,697,630)	6,663,812	24,135,959	29,567,243	33,188,467	46,263,450	61,360,346	83,134,481	69,001,093	59,618,802	68,103,793	78,938,968
Financial Charges	2,431,667	2,161,481	9,344,889	16,393,204	16,123,018	14,807,333	12,446,148	10,084,963	7,723,778	5,362,593	3,136,500	1,045,500
Interest Expenses	2,431,667	2,161,481	9,344,889	16,393,204	16,123,018	14,807,333	12,446,148	10,084,963	7,723,778	5,362,593	3,136,500	1,045,500
Other Income and Expenses	2,398,350	2,811,542	3,254,191	3,729,698	4,268,146	4,704,838	5,178,852	5,693,092	6,250,661	6,672,214	7,113,922	7,576,636
Franchise Tax	2,398,350	2,811,542	3,254,191	3,729,698	4,268,146	4,704,838	5,178,852	5,693,092	6,250,661	6,672,214	7,113,922	7,576,636
NET INCOME	(6,527,646)	1,690,788	11,536,879	9,444,341	12,797,302	26,751,279	43,735,346	67,356,425	55,026,634	47,583,995	57,853,371	70,316,832

III. Cash Flow Statement (Php)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Cash Flow from Operating Activities												
Net Income	(6,527,646)	1,690,788	11,536,879	9,444,341	12,797,302	26,751,279	43,735,346	67,356,425	55,026,634	47,583,995	57,853,371	70,316,832
Add: Depreciation	5,814,684	5,814,684	5,814,684	12,087,684	12,087,684	12,087,684	12,087,684	12,087,684	12,087,684	12,087,684	12,087,684	12,087,684
Collection of Accounts Receivables		36,988,876	51,645,925	65,415,920	79,445,708	95,500,845	110,969,234	127,977,612	146,655,089	167,140,728	188,949,075	212,141,055
Provision for Accounts Receivables	(36,988,876)	(51,645,925)	(65,415,920)	(79,445,708)	(95,500,845)	(110,969,234)	(127,977,612)	(146,655,089)	(167,140,728)	(188,949,075)	(212,141,055)	(236,780,059)
Total Cash Flow from Operating Activities	(37,701,838)	(7,151,577)	3,581,568	7,502,238	8,829,849	23,370,573	38,814,653	60,766,632	46,628,679	37,863,332	46,749,074	57,765,512
Cash Flow from Financing Activities												
Bank Loan		-	139,400,000	-	-	-	-	-	-	-	-	-
Principal Payment		(2,573,192)	(2,573,192)	(2,573,192)	(2,573,192)	(2,573,192)	(2,573,192)	(2,573,192)	(2,573,192)	(2,573,192)	(2,573,192)	(2,573,192)
Existing Loan		2,573,192	2,573,192	2,573,192	2,573,192	2,573,192	2,573,192	2,573,192	2,573,192	2,573,192	2,573,192	2,573,192
New Loan		2,573,192	141,973,192	2,573,192	2,573,192	22,487,478	22,487,478	22,487,478	22,487,478	22,487,478	19,914,286	19,914,286
Total Cash Flow from Financing Activities		2,573,192	141,973,192	2,573,192	2,573,192	22,487,478	22,487,478	22,487,478	22,487,478	22,487,478	19,914,286	19,914,286
Cash Flow from Investing Activities												
Capital Expenditures- Water Service Improvement Program		-	(139,400,000)	-	-	-	-	-	-	-	-	-
Maintenance Capital Expenditure		-	-	-	(5,300,000)	-	(5,300,000)	-	(5,300,000)	-	(5,300,000)	-
Total Cash Flow from Investing Activities		-	(139,400,000)	-	(5,300,000)	-	(5,300,000)	-	(5,300,000)	-	(5,300,000)	-
NET CASH FLOW	(37,701,838)	(4,578,385)	6,154,760	10,075,430	6,103,041	45,858,051	56,002,131	83,254,110	63,816,157	60,350,810	61,363,360	77,679,798
Beginning Cash		23,000,432	18,422,047	24,576,808	34,652,238	40,755,279	86,613,330	142,615,461	225,869,571	289,685,728	350,036,538	411,399,898
ENDING CASH BALANCE		18,422,047	24,576,808	34,652,238	40,755,279	86,613,330	142,615,461	225,869,571	289,685,728	350,036,538	411,399,898	489,079,696

IV. Debt Table

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Existing Loan from LWUA	23,158,729	20,585,537	18,012,345	15,439,153	12,865,961	10,292,769	7,719,576	5,146,384	2,573,192	0	19,914,286	-
Additional Loan (10 Years to pay with 3 years grace period)			139,400,000	139,400,000	139,400,000	119,485,714	99,571,429	79,657,143	59,742,857	39,828,571	19,914,286	-
Total Outstanding Loans		20,585,537	157,412,345	154,839,153	152,265,961	129,778,483	107,291,005	84,803,527	62,316,049	39,828,571	19,914,286	-
Interest Rate on old and new loan	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%
Estimated Interest Expense	2,431,667	2,161,481	9,344,889	16,393,204	16,123,018	14,807,333	12,446,148	10,084,963	7,723,778	5,362,593	3,136,500	1,045,500
V. Financial Ratios												
Particulars	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Debt Service Coverage Ratio	0.7	2.0	2.2	2.0	2.2	1.4	2.0	2.7	2.5	2.3	3.2	4.0
Debt-to-Equity Ratio	-	0.3	0.3	1.2	1.1	1.0	0.7	0.5	0.3	0.2	0.1	0.1
Net Profit Margin	-5%	1%	7%	5%	6%	11%	17%	24%	18%	14%	16%	19%
Return on Equity	0%	1%	9%	7%	9%	16%	23%	28%	18%	13%	14%	15%
Current Ratio	-	6.0	6.4	7.6	9.1	11.0	12.3	15.0	19.7	23.3	26.4	30.5

Appendix 4.B. Regional Water Tariffs as of September 2007

Local Water Utilities Administration (Php)						
Minimum Charge	11 - 20	21 - 30	31 - 40	41 - 50	51 - 60	
cu m						
Ajay	180.00	21.00	24.25	27.75	31.50	31.50
Bagu	170.00	18.00	19.50	21.50	24.00	24.00
Banatel	150.00	15.50	16.75	18.75	21.00	21.00
Caciquejor	160.00	17.60	19.50	21.85	24.90	24.90
Capisce	150.00	16.00	17.00	18.00	20.00	20.00
Carmencita	162.00	19.50	21.25	23.25	25.50	25.50
Concepcional	170.00	17.30	18.05	18.50	18.95	18.95
Corcolonan	150.00	16.00	18.50	21.50	25.50	25.50
Culasisi	132.00	14.00	15.50	17.50	20.00	20.00
Dingalen-Pototan	183.50	20.15	22.30	25.00	28.50	28.50
Duenos	188.00	19.80	22.20	26.50	24.50	24.50
Escalantico	169.00	18.50	20.50	23.00	25.50	25.50
Ibajoy	183.50	22.45	24.45	27.00	30.75	30.75
Matinog	193.00	20.55	22.25	24.50	27.50	27.50
Metro Anihao	205.00	21.25	22.75	24.75	27.00	27.00
Pandagnanan	213.00	22.45	24.45	27.00	30.75	30.75
Retawon	210.00	20.00	23.00	26.00	31.00	31.00
Silayan	185.00	22.90	25.65	28.90	32.40	36.15
Tagbilad	153.00	17.00	18.00	19.00	21.00	21.00
Regional Average	174.05	18.94	20.83	23.17	25.80	26.00

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Contributing authors



Ramon B. Alikpala heads the National Water Resources Board. His fields of expertise cover economic regulation, business analysis and strategy, and water governance. Since 2003, he has served as Chairman of the Asian Development Bank Peer Review of Apex Bodies, and a member of The Water Dialogue – International Working Group. He is also a Steering Committee Member of the Global Water Partnership and the Chairman of the Philippine Water Partnership. He holds a Master's Degree in Business Administration from the Fordham University in New York.



Arnold R. Alvarez is a Water Resources and Water Supply Specialist from CEST, Incorporated. He holds a Bachelor's Degree in Geology and is currently completing his thesis for post-graduate studies on Environmental Engineering. He has been involved in water supply projects for the past 15 years.



Ferdinand S. Asuncion is a Water and Sanitation Engineer with 19 years of experience in a range of infrastructure projects in the Philippines, Southeast Asia, and South America. He is a BS Civil Engineering graduate of the University of the Philippines and holds a Master's Degree in Sanitary Engineering from the International Institute for Hydraulic and Environmental Engineering, in Delft, Netherlands. He is currently the Senior Project Specialist of the PWRF Support Program.



Aileen B. Castro earned her AB Economics and MBA degrees from the University of Santo Tomas and the Ateneo Graduate School of Business, respectively. She has been working with financial institutions for 15 years, and is currently the head of the Relationship Management Department of LGUGC and acts as the head of LGUGC's credit rating team for water districts.



Doreen Carla E. Erfe is currently the Policy and Institutional Development Specialist of the PWRF Support Program. She has extensive experience in policy development and review, and in project development and monitoring, particularly in the fields of finance, agriculture and environment. She has assisted in the establishment and implementation of monitoring and evaluation systems of several foreign-assisted projects. Ms. Erfe has a Master's Degree in Economics from the University of the Philippines.



Ephraim M. Jacildo is a civil engineer by profession and has been in the water industry for the past 32 years. His exposure is mostly in the preparation of water supply feasibility studies and development plans for various water districts in the Philippines. He had been involved in the water supply feasibility study undertakings of different foreign consultants (Camp Dresser and McKee, C. Lotti & Associati, Motor Columbus) when their services were engaged by the Philippine Government from mid-1970s to late 1980s.



Jose Marie U. Lim is a BS Chemical Engineering and MS Environmental Engineering graduate of the University of the Philippines. He is a Water and Wastewater Treatment Specialist and has worked as a process design consultant on several projects for Metropolitan Waterworks and Sewerage System, Maynilad Water Services, Inc. and Manila Water. He is an Assistant Professorial Lecturer at the De La Salle University - Manila teaching graduate environmental engineering courses. He started his doctorate studies in chemical engineering at DLSU-Manila in January 2006.



Del N. McCluskey, a DAI staff member and Technical Area Manager for the water sector, has 26 years of development experience worldwide, having designed, led, and managed more than \$1.2 billion worth of USAID projects in Latin America and Asia. Since joining DAI in 2004, Mr. McCluskey has led the development of several DAI contracts funded by USAID focused on addressing water management and service delivery challenges. Before joining DAI, Mr. McCluskey served in a variety of different positions during a 21-year career with USAID, including a four-year assignment leading the development and implementation of environment and energy programs in the Philippines.



Adoracion M. Navarro has 12 years experience in infrastructure economics and finance, initially as a Project Evaluation Specialist in Philippine government agencies and later as an independent consultant. She currently works as an Economic Policy Specialist for the Philippine Water Revolving Fund (PWRF) Support Program's technical assistance to the National Water Resources Board (NWRB). She is a graduate of the University of the Philippines and Columbia University in New York.



Rodolfo A. Pantillano is an Infrastructure Finance Specialist from TCGI LLC., a Washington-based development consultancy firm. He has over 17 years experience as an investment and economic analyst and has held consultancy positions in several international development and finance institutions. Mr. Pantillano as a Water and Sanitation Finance Specialist of the PWRF Support Program conceptualized the Water Project Appraisal Guidebook and was assigned as its Development Task Manager. He holds a bachelor and masteral degrees in Economics from the University of the Philippines.



Armando H. Paredes is the General Manager and concurrently Assistant General Manager for Technical Services and Operations, as well as the Manager of the Special Projects Department of the Metropolitan Cebu Water District. He also serves as the Technical Consultant to its Board of Directors. He is currently the President of the Visayas Association of Water Districts; Vice-President for Visayas of the Philippine Association of Water Districts (PAWD) Foundation; member of the Philippine Waterworks Association and the Philippine Water Partnership. Mr. Paredes is a chemical engineer by profession and has a Master's Degree in Business Administration from the University of the Philippines.



Alma D. Porciuncula has 25 years of experience in infrastructure capital project financing, privatization, project appraisal, policy analysis, institutional strengthening, and project development and management for private sector and international donor clients. She is currently the Chief of Party of the Philippine Water Revolving Fund Support Program which introduces new options for financing water and sanitation investment by leveraging scarce public resources with domestic private capital. Ms. Porciuncula holds a post graduate diploma in Development Studies from the Institute of Developing Economies Advanced School in Japan and a Master's Degree in Urban and Regional Planning from the University of the Philippines.



Mario I. Quitariano is in charge of reviewing and recommending project proposals and water rate adjustments for water districts in Visayas and Mindanao for the Local Water Utilities Administration. He has been with LWUA since 1975 and has held various positions including Senior Deputy Administrator. Mr. Quitariano is a Chemical Engineering graduate of the University of the Philippines and has taken some MBA units from De LaSalle University.



Antonio R. de Vera has worked for 35 years in water supply institutions, 25 of which he spent with the Local Water Utilities Administration. His experience covers technical, policy, managerial, and financial aspects of different water supply models. Since 2000, he has been an active consultant for a number of projects in the Philippines and Southeast Asia, conducting performance reviews for water districts, evaluating technical and financial proposals, advising on rural water supply frameworks, and consulting on tariffs and financial monitoring systems. He has also served as Chairman of the Subic Bay Water Regulatory Board for the Freeport Zone since 2000.

List of Partners

HON. JEREMIAS PAUL, JR.

Undersecretary
Department of Finance
5/F DOF Building
Bangko Sentral ng Pilipinas Complex
Roxas Boulevard, Manila
Tel: 523 9222
Fax: 525 1313
Email: jpaul@dof.gov.ph

MR. REYNALDO DAVID

President
Development Bank of the Philippines
Sen. Gil Puyat cor Makati Ave.
Makati City
Tel: 812 6537
Fax: 815 1607
Email: rgdavid@devbankphil.com.ph

MS. HELEN HABULAN

Executive Director
Municipal Development Fund Office
7/F, EDC Building
Roxas Boulevard
Manila
Tel: 525 9187
Fax: 525 9186
Email: hhabulan@dof.gov.ph

MR. DANIEL LANDINGIN

Acting Administrator
Local Water Utilities Administration
MWSS-LWUA Complex
Katipunan Road, Balara, Quezon City
Tel: 9205433
Fax: 9205433
Email: dilandingin@lwua.gov.ph

MS. LYDIA ORIAL

President
LGU Guarantee Corporation
28/F, Antel 2000, 121 Valero St.
Salcedo Vill., Makati City
Tel: 845 3386
Fax: 888 4217
Email: dengorial@lgugc.bayandsl.ph

MR. DANIEL MOORE

Chief
Office of Energy and Environment
USAID Philippines
8/F PNB Financial Center
Diosdado Macapagal Avenue, Manila
Tel: 552 9800
Fax: 552 9997
Email: dmoore@usaid.gov

MS. JOY JOCHICO

Office of Energy and Environment
USAID Philippines
8/F PNB Financial Center
Diosdado Macapagal Avenue, Manila
Tel: 552 9800
Fax: 552 9997
Email: mjochico@usaid.gov

MR. HIROSHI TOGO

Principal Senior Representative
40/F Yuchengco Tower
RCBC Plaza, Makati City
Tel: 889 7119 loc 251
Fax: 8896850
Email: Togo.Hiroshi@jica.co.jp

MR. JIN WAKABAYASHI

Representative
40/F Yuchengco Tower
RCBC Plaza, Makati City
Tel: 889 7119 loc 251
Fax: 8896850
Email: Wakabayashi.Jin@jica.co.jp

Greetings from the PAWD President

My esteemed felicitations to the partnership of the Government of the Philippines (GOP), USAID and the JICA, for spearheading the development of the PWRP to specifically address the huge financing requirements of water and sanitation services in our country.

This trilateral effort assures a sustained mobilization of resources to meet the nation's Millennium Development Goal (MDG).

The PAWD gladly welcomes PWRP publication of its "Water Supply Project Appraisal Guidebook for Investors and Decision Makers." This would greatly enhance the energy and momentum which the guidebook seeks to achieve.

PAWD, with its more than 500 members, serving about 25 million people in the countryside, fully supports such relentless commitment to meet the government's program for sustainable and convenient access to safe drinking water and basic sanitation services, to the greatest number of people and to the farthest extent practicable, by year 2015.

More power and Mabuhay!



DELFIN C. HILARIO

President

PAWD

Directory of water districts

PHILIPPINE ASSOCIATION OF WATER DISTRICTS, INC.

Regional List of Water Districts

CORDILLERA ADMINISTRATIVE REGION (CAR)

Comprises: Abra, Benguet, Kalinga, Apayao & Mountain Province- 12 / 6

CCC No.	WATER DISTRICT	ADDRESS	GENERAL MANAGER	CHAIRMAN	TELEPHONE NUMBER/S	FAX NUMBER/S	STA	S/C	CLASS
18	Baguio	003 Purok BWD, # 003 Brgy, Marcoville, Baguio City 2600	Ms. Teresita P. de Guzman	Atty. Moises P. Cating	(074) 442-3456 / 4858 / 3218	(074) 442-3456 / 4858	O	28,909	Large
456	Dolores	Poblacion, Dolores, Abra 2801	Ms. Anneli E. Barbero	Ms. Regina G. Reyes	(074) 382-2106		O	537	Small
325	Ifugao	362 Lumingay St., Pob. North, Lagawe, Ifugao 3600	Ms. Marjorie P. Malingan	Mr. Vicente H. Lunag	(074) 382-2106		O	548	Small
483	Itogon	Itogon, Benguet 2604	Engr. Lomino N. Kamiteng (OIC)	Engr. Lomino N. Kamiteng			NO		
100	La Trinidad	Km. 5, Central Pico, La Trinidad, Benguet 2601	Engr. Oliver L. Taule	Engr. John P. Cutiyog	(074) 422-2679 / 2078 / 1848 / 2477	(074) 422-1848	O	10,169	Medium
442	Lagangilang	Poblacion, Laang, Lagangilang, Abra 2802	Mr. Winfred T. Gaoiran	Mr. Vicente A. Tanseco		(074) 752-7760 (request)	O	565	Small
469	Lubuagan	Lubuagan, Kalinga 3802					NO		
28	Metro Bangued	Cor. Taft & Actividad Economia Sts., Bangued, Abra 2800	Ms. Leanida A. Balbin	Mr. Julian Q. Tajolosa (IB)	(074) 752-8001 / 8169	(074) 752-8169	O	5,312	Big
614	Paracelis	Paracelis, Mountain Province 2625					NO		
453	San Juan	San Juan, Abra 2823	Engr. Elpidio Galinato, Jr.	Mr. Benjamin O. Dickson			NO		
384	Tabuk	Tabuk, Kalinga 3800	Engr. Felixander C. Falgui	Mr. Jovenal Arboleda			NO		
454	Tayum	Poblacion, Tayum, Abra 2803	Mr. Hidolfo Brillantes	Ms. Geronima Elvena			NO		
REGION I									
Comprises: Ilocos Norte, Ilocos Sur,									
La Union & Pangasinan - 53 / 45									
468	Agno	Agno, Pangasinan 2408	Mr. Eduardo Navarette	Mr. Dominador P. Navarro			NO		
178	Agoo	Fangonil Road, Sta. Barbara, Agoo, La Union 2504	Engr. Romeo M. Diaz (IGM)	Mr. Erlindo N. Pocsidio	(072) 710-0079		O	206	Small
34	Alaminos City	Alaminos City WD Bldg., Poblacion, Alaminos City, Pangasinan 2404	Mr. Felipe B. Pagador	Mr. Leon M. Rivera, Jr.	(075) 552-7180; 551-5432	(075) 551-3230	O	9,094	Big
166	Alcala	Rizal Ave., Pob. West, Alcala, Pangasinan 2425	Mr. Noel Rodrigo A. Dacanay (Acting)	Mr. Catalino H. Magno	(075) 593-3038	(075) 593-3038	O	1,000	Small
524	Asingan	Mayor's Blvd., Asingan, Pangasinan 2439	Engr. Alexander C. Monce	Mr. Espiridion B. Sonaco	(075) 563-2984	(075) 563-2984	O	2,227	Small
81	Badoc	Badoc, Ilocos Norte 2904	Mr. Esmeraldo C. Agabin				O	600	Small
59	Balaoan	Nat'l Hi-way - Dr. Camilo Osias, Balaoan, La Union 2517	Engr. Victor R. Obillo	Mr. Richard I. Ramirez	(072) 607-0360	(072) 607-0360	O	921	Small

560	Balungao	Poblacion, Balungao, Pangasinan 2442	Engr. Carlina L. Estrella	Mr. Hermenegildo C. Libantino	(075) 583-4083	(075) 583-4083	O	932	Small
74	Bani	Poblacion, Bani, Pangasinan 2407	Ms. Remy P. Manaois	Atty. Franklin C. Cariño	(075) 553-3018	(075) 553-3018	O	2,138	Average
544	Basista	Magsaysay Avenue, Palma, Basista, Pangasinan 2422	Mr. Gualberto F. Seguin, Jr.	Mr. Pepito R. Frias	(075) 505-2279		O	815	Small
250	Batac	Marders Bldg., No. 17 Tabug, Batac, Ilocos Norte 2906	Arch. Saturnino M. Arancon	Mr. William K. Marders	(077) 792-3026	(077) 792-2350	O	970	Small
119	Bayambang	Rizal Ave., Zone II cor Juan Luna, Bayambang, Pangasinan 2423	Mr. Francis J. Fernandez	Atty. Jose J. Pacia	(075) 592-3956	(075) 592-3956	O	3,792	Average
285	Binalonan	McKinley St., Poblacion, Binalonan, Pangasinan 2436	Engr. Dominador N. Castañeto, Jr.	Ms. Susan Espiritu	(075) 562-2281	(075) 562-2281	O	955	Small
97	Binmaley	Caloocan Sur, Poblacion, Binmaley, Pangasinan 2417	Engr. Mariano V. Gonzalo	Ms. Ida F. Rosario	(075) 540-0054; 543-2791	(075) 540-0054	O	7,811	Medium
567	Bugallon	Municipal Bldg. Compound, Bugallon, Pangasinan 2416	Engr. Aldrin Z. Aquino	Atty. Eufrocino L. Bermudez	(075) 544-5161	(075) 544-5161	O	1,085	Small
312	Caba	Caba, La Union 2502	Mr. Jose B. Bacalzo	Mr. Romeo P. Runas			NO		
571	Candon City	Old Mun. Bldg., San Juan, Candon City, Ilocos Sur 2710	Mr. Cesar G. Llanes	Mr. Dante G. Pacquing	(077) 742-4201	(077) 742-4201	O	727	Small
297	Dagupan City	Tambac District, Mangin-Tebang Rd., Dagupan City, Pangasinan 2400	Mr. Ramon C. Reyna	Engr. Macarthur M. Samson	(075) 515-8220; 522-7762 / 0050	(075) 522-0050 / 8592	O	17,256	Big
208	Dingras	Brgy. Guerero, Dingras, Ilocos Norte 2913	Ms. Corazon B. Guira	Mr. Venancio V. Ay-ay	(077) 784-7358 / 0370	(077) 784-7358	O	1,080	Small
210	Ilocos Norte	Ermita Hill, Laoag City, Ilocos Norte 2900	Mr. John M. Teodoro	Mr. Emeric S. Asuncion	(077) 772-0985 ; 771-4814 ; 770-3683	(077) 771-4814	O	15,746	Large
546	Infanta	Infanta, Pangasinan 2412	Engr. Mandy Ceralde	Mr. Alberto T. Tagulan			O	250	Small
52	Lingayen	69 Avenida Rizal West, Lingayen, Pangasinan 2401	Mr. Joewelito S. Gonzales	Mr. Rosalino E. Vocal	(075) 542-6136 / 5608	(075) 542-6136	O	2,850	Average
526	Magsingal	Magsingal, Ilocos Sur 2730	Engr. Tiburcio T. Tabarrejo, Jr.	Mr. Oderico Garcia	(077) 726-3623		NO		
128	Manaoag	2/F, EJE Bldg., Milo St., Manaoag, Pangasinan 2430	Ms. Josie S. Villanueva	Mr. Ranulfo B. Cariño	(075) 529-0254; 519-3155	(075) 529-0254	O	3,916	Medium
139	Mangaldan	Serafica St., Mangaldan, Pangasinan 2432	Engr. Marcelo M. Petonio	Dr. Numeriano G. Presto	(075) 523-5884	(075) 513-5018	O	6,955	Big
612	Mapandan	Mapandan, Pangasinan 2429					NO		
16	Metro La Union	Quezon Avenue, San Fernando City, La Union 2500	Engr. Felipe G. Picazo	Mr. Mariano M. Chan	(072) 888-2158 / 2181	(072) 242-2003	O	8,067	Big
113	Metro Tayug	Bonifacio St., Tayug, Pangasinan 2445	Engr. Manuel Simeon R. Mapili	Mr. Leoncio G. Suarez	(075) 572-2905	(075) 572-2905	O	1,346	Small
53	Metro Vigan	Mira Hills, Anonang Mayor, Caoayan, Ilocos Sur 2700	Engr. Edgardo S. Damian	Dr. Marino Rivas, Jr.	(077) 722-2098 / 6063	(077) 722-6063	O	4,474	Average
84	Naguilian	Naguilian, La Union 2511	Mr. Samuel M. Cachero	Ms. Perla F. Costales	(072) 609-1470	(072) 609-1470	O	1,706	Average
352	Narvacan	Brgy. San Jose, Narvacan, Ilocos Sur 2704	Engr. John Haskel P. Calpito	Mr. Constante A. Cabitac			O	206	Small
133	Pozorrubio	Rizal St., Pozorrubio, Pangasinan 2435	Engr. Ferdinand E. Erfe	Mr. Mesias S. Perez	(075) 566-7025 / 3808	(075) 566-7025	O	2,151	Small
270	Rosales	No. 5, Bonifacio St., Rosales, Pangasinan 2441	Mr. John A. Ulpindo	Dr. Rodilon G. Bañez	(075) 582-2642 / 3550	(075) 582-2642	O	3,147	Medium
89	Rosario	Poblacion East, Rosario, La Union 2506	Engr. Renante B. Rimando	Mr. Dante G. Lachica	(075) 712-1508	(075) 712-1508	O	780	Small
44	San Carlos City	Mabini St., San Carlos City, Pangasinan 2420	Mr. Alfredo R. Vicente	Mr. Jose C. Magleo	(075) 532-3005 / 2830	(075) 634-1584	O	5,429	Average

329	San Jacinto	San Jacinto, Pangasinan 2431	Mr. Patrocino Dumpit	Ms. Adelaida Nato		NO		
562	San Manuel	San Manuel, Pangasinan 2438	Engr. Carolina Moraleda			O	967	Small
207	San Nicolas	Brgy. 11, San Nicolas, Ilocos Norte 2901	Dr. Wilson D. dela Cruz	Ms. Mariel S. Hernando	(077) 770-4017 ; 773-1212	O	3,209	Average
255	San Nicolas	Zamora St., San Nicolas, Pangasinan 2447	Engr. Marites R. Gonzales	Mr. Santiago S. Realigue	(075) 573-3753	O	1,441	Small
553	San Quintin	Pop., Zone 1 San Quintin, Pangasinan 2444	Engr. Jayson C. Antolin	Ms. Jovita R. Ordonio	(075) 575-3342 / 2629	O	668	Small
299	Santa	Santa, Ilocos Sur 2703	Mr. Eduardo Sabalbuo			O	400	Small
417	Santa Cruz	Santa Cruz, Ilocos Sur 2713	Mr. Adrian Velasco, Jr.			NO		
349	Santa Lucia	Barangobong, Santa Lucia, Ilocos Sur 2712	Mr. Alejandro E. Fausto	Mr. Domingo B. Bodaño	(077) 674-7792	O	320	Small
311	Santa Maria	Santa Maria, Ilocos Sur 2705	Mr. Godofredo Belmonte			NO		
554	Santa Maria	Cendaña cor, Munan Sts., Pob. West, Santa Maria, Pangasinan 2440	Mr. Antonio N. Junio	Ms. Luisa S. Pascua	(075) 574-2105 / 2655	O	1,372	Small
429	Santo Domingo	Santo Domingo, Ilocos Sur 2729				NO		
350	Sarrat	Brgy. 5, Sta. Barbara, Sarrat, Ilocos Norte 2914	Ms. Florence S. Gelacio	Mr. Evaristo R. Agor, Jr.	(077) 782-2091	O	744	Small
573	Sinait	Sinait, Ilocos Sur 2733	Mr. Manuel Ines	Ms. Elena Cabacuñgan		O		Small
177	Tagudin	G/F, Gardenia's Bldg., Del Pilar, Tagudin, Ilocos Sur 2714	Mr. Ulpiano C. Villamar	Mr. Eduardo M. Custodio	(077) 652-2012	O	1,007	Small
148	Umingan	Progreso St., Umingan, Pangasinan 2443	Mr. Juan F. Calibuso, Jr.	Engr. Simplicio C. Belisario, Jr.	(075) 576-2170	O	1,008	Small
304	Urbizondo	Luna St., Urbizondo, Pangasinan 2414	Mr. Rafael L. Almendrala	Mr. Rizal O. Mendoza	(075) 594-3713	O	824	Small
24	Urdaneta City	Cultural & Sports Center, Urdaneta City, Pangasinan 2428	Mr. Casiano J. Callanta	Mr. Jose D. Sumait	(075) 568-2425 / 3553	O	4,817	Medium
95	Villasis	Poblacion, Villasis, Pangasinan 2427	Mr. Lydio S. Raguindin	Mr. Romeo S. Abrenica	(075) 564-4016	O	2,545	Average
REGION 2								
Comprises: Cagayan, Isabela,								
Quirino & Nueva Vizcaya - 41 / 25								
354	Aglipay-Saguday	San Leonardo, Aglipay, Quirino 3403	Mr. Primitivo D. Tallungan			NO		
535	Alcala	Alcala, Cagayan 3507	Mr. Lorenzo A. Clavinez, Jr.	Mr. Ernesto Manuel		NO		
198	Alicia	Municipal Comp., Quezon St., Magsaysay, Alicia, Isabela 3306	Ms. Maria Nimfa C. Abuan	Dr. Felipe A. Salvador, Jr.	(078) 662-7172	O	1,012	Small
426	Allacapan	Allacapan, Cagayan 3523	Mr. Pacifico Balaan			NO		
278	Angadanan	Centro II, Angadanan, Isabela 3307	Mr. Manuel S. Gaffud	Mr. Hilarion M. Mariano	(078) 694-1009	O	575	Small
68	Aparri	J. Abad Santos St., San Antonio, Aparri, Cagayan 3515	Mr. Ramon F. Gorospe	Ms. Emerenciana A. Garcia	(078) 822-8379	O	1,309	Small
391	Ballesteros	Ballesteros, Cagayan 3516				NO		
196	Bambang	Bambang, Nueva Vizcaya 3702	Mr. Estreban Pobre			NO		
283	Benito Soliven	District 2, Benito Soliven, Isabela 3331	Engr. Wilson G. Valdez	Mr. Jeollito Aves	(078) 622-3623	O	216	Small
392	Buguey-Sta. Teresita	Centro, Buguey, Cagayan 3511	Engr. Julio Valeros	Mr. Julio Valeros		NO		

182	Cabagan	Centro, Cabagan, Isabela 3328	Mr. Candido T. Calata, Jr.	Ms. Esther Z. Antonio	(078) 636-3107	(078) 636-3107	O	1,867	Small
344	Cabarruguis	BLISS, Zamora, Cabarruguis, Quirino 3400	Mr. Joel C. Narciso	Engr. Paulino B. Turia	(0927) 222-4977		O	167	Small
538	Cabatuan	Cabatuan, Isabela 3315	Mr. Demetrio J. Marcelo				NO		
183	Cauayan City	#166 Cor. Africano & Burgos Sts., Cauayan City, Isabela 3305	Engr. Artemio A. Quintero	Mr. Gil AQ. Guzman	(078) 652-2196 ; 897-1318	(078) 652-0644	O	5,777	Big
203	Claveria	# 69 Centro 2, Claveria, Cagayan 3519	Dr. Adrelina N. Pulido	Atty. Cecilio SY. Javier, Jr.	(078) 866-1024	(078) 866-1024	O	939	Small
287	Cordon	Magsaysay, Cordon, Isabela 3312	Engr. Godofredo L. Vicmudo	Mr. Gene G. Naval	(078) 694-9019	(078) 694-9019	O	661	Small
412	Delfin Albano	Delfin Albano, Isabela 3326	Mr. Nelson B. Taguía				NO		
613	Diadi	Diadi, Nueva Vizcaya 3712					NO		
279	Diffun	Public Market Bldg., Diffun, Quirino 3401	Engr. Manuel T. Meña	Mr. Clemente S. Salvador, Jr.	(078) 694-7050	(078) 694-7015	O	695	Small
615	Gamu	Gamu, Isabela					NO		
239	Gattaran	Maharlika Hi-way cor. Liban St., Gattaran, Cagayan 3508	Engr. Joel G. Singson	Engr. Danilo C. Nolasco			O	236	Small
214	Gonzaga	29 Adduro St., Smart Zone, Gonzaga, Cagayan 3513	Mr. Marcos G. Gaspar	Mr. Pedro B. Cimatu		(078) 856-6502 (request)	O	1,075	Small
90	Ilagan	2/F Public Market Bldg., Rizal St., Ilagan, Isabela 3300	Engr. Jose Mari G. Claravall	Engr. Tomas A. Beltran	(078) 624-2083 ; 622-2764	(078) 624-2083	O	2,321	Average
302	Lal-Lo	Municipal Hall Compound, Centro, Lal-Lo, Cagayan 3509	Engr. Jose Jacob S. Medinaceli	Mr. Emilio P. Daguro	(078) 854-3026	(078) 854-3026	O	828	Small
374	Lasam	Lasam, Cagayan 3524	Mr. Ignacio B. Juado, Jr.	Mr. Meneses S. Sebastian			NO		
460	Luna	Centro, Luna, Isabela 3304	Mr. Romulo C. Martinez				NO		
337	Maddela	Poblacion Sur, Maddela, Quirino 3404	Mr. Edarlino A. Ladia	Mr. Benjamin Galapon			O	105	Small
65	Metro Tuguegarao	2/F Supermarket Bldg., Tuguegarao City, Cagayan 3500	Mr. Arnulfo P. Villania	Dr. Rosario S. Mallonga	(078) 844-1586 / 7309	(078) 844-8540	O	22,596	Big
458	Peñablanca	Camasi, Peñablanca, Cagayan 3502	Engr. Calixto C. de Leon	Mr. Adriano D. Tagacay	(078) 304-0498		O	902	Small
294	Ramon	G/F, Old Municipal Bldg., Ramon, Isabela 3319	Engr. Herculano P. Valmoja	Mr. Jose G. Castillo			O	338	Small
572	Reina Mercedes	Tallungan, Reina Mercedes, Isabela 3303			(0927) 393-5152		O	750	Small
199	Roxas	2/F Public Market Bldg., M. Marcos Ave., Roxas, Isabela 3320	Engr. Juanito S. Saldares, Jr.	Mr. Rolando B. Lintao	(078) 642-8146		O	1,637	Average
485	San Guillermo	Centro I, San Guillermo, Isabela 3308	Engr. David K. Tomas	Mr. Ireneo P. Name	(076) 622-2028		NO		
421	San Manuel	District 3, San Manuel, Isabela 3317	Engr. Edgar P. Casayuran	Mr. Felino Mateo	(078) 664-6185		O	1,220	Small
338	San Mariano	San Mariano, Isabela 3332					NO		
534	Sanchez Mira	Maharlika Hi-way, Centro I, Sanchez Mira, Cagayan 3518	Engr. Mariano R. Agdeppa	Mr. Arnulfo A. Apostol	(078) 822-9231	(078) 822-9231	O	700	Small
585	Santa Ana	Centro, Santa Ana, Cagayan 3514	Arch. Nestor S. Bumanglag	Engr. Arnold G. Costales	(078) 372-0531		O	215	Small
411	Santa Maria	Santa Maria, Isabela 3330	Mr. Romeo G. Carinugan	Mr. Danilo Cabautan			NO		
92	Santiago	3 Carreon St., Centro East, Santiago City, Isabela 3311	Mr. Winston A. Foz	Dr. Jose C. Navarro, Jr.	(078) 682-8300 / 5639	(078) 682-8300	O	6,678	Big
480	Tuao	Tuao, Cagayan 3528	Mr. Roberto G. Recheta				NO		
309	Tumauini	2/F Public Market Bldg., San Pedro, Tumauini, Isabela 3325	Mr. Justito S. Jimenez, Jr.	Mr. Ignacio B. Cabautan	(078) 632-4051	(078) 632-4051	O	1,550	Small

REGION 3									
Comprises:Aurora, Bulacan, Pampanga, Tarlac									
Nueva Ecija, Bataan & Zambales - 100 / 83									
292	Angat	269 M.A. Fernando St.,Angat, Bulacan 3012	Engr.Arturo S. Torres	Mr. Elmer F. Gonzales	(044) 671-1204	(044) 908-0058	O	5,575	Medium
322	Angeles City	Pampang Road, Brgy. Lourdes North West-Angeles City 2008	Engr. Romeo P. Calara	Mr. Edgar C. Lopez	(045) 888-7222 / 4352 / 4891; 323-4209	(045) 888-7222	O	34,809	Large
463	Arayat	Arayat, Pampanga 2012	Ms. Lorna S. Kibanoff	Mr. Efrén Pamintuan			NO		
160	Bacolor	Sta. Ines, Bacolor, Pampanga 2001	Ms. Luciana R. Capili	Engr. Bembenuto M. Maglaqui	(045) 900-2911		O	760	Small
272	Bagac	Old Municipal Bldg., Bagac, Bataan 2107	Mr. Eduardo C. Mendoza	Msa. Teresita M. Barker	(047) 612-0338		O	1,250	Small
362	Balagtas	BCCDI Bldg., Wawa, Balagtas, Bulacan 3016	Engr. Jesus A. Garcia	Ms. Anita C. Rabuya	(044) 693-1062	(044) 693-1062	O	2,097	Small
124	Balanga	St. Joseph St., Poblacion Balanga City, Bataan 2100	Mr. Carlito B. de Leon	Engr. Ricardo B. Datu	(047) 237-3491	(047) 237-3868	O	6,004	Medium
233	Baler	T. Molina St., Brgy. Y. Baler, Aurora 3200	Mr. Portia L. Alcaide	Ms. Gloria S. Paladio	(0919) 449-0376		O	326	Small
407	Baliwag	B.A. Aquino Avenue, Baliwag, Bulacan 3006	Mr. Artemio F. Baylosis	Mr. Conrado E. Evangelista	(044) 766-2618 ; 673-2682	(044) 766-3737	O	17,680	Big
223	Bamban	Bamban, Tarlac 2317					NO		
86	Bocaue	No. 130 Gov. F. Halili Ave. Extn., Biñang II, Bocaue, Bulacan 3018	Engr. Ricardo B. Perez	Mr. Rainerio Y. Santos	(044) 692-1659 / 5864	(044) 692-5864	O	7,294	Medium
410	Bongabon	#82 Brgy. Magtanggol, Bongabon, Nueva Ecija 3128	Mr. Danilo R. Gamilla II	Mr. Emmanuel D. Mendoza	(044) 961-0079	(044) 961-0079	O	1,365	Small
545	Botolan	Bancal, Botolan, Zambales 2202					NO		
378	Bulacan	Aguas Potables Bldg., Bagumbayan, Bulacan, Bulacan 3017	Ms. Ma. Liza DJ. Dela Cruz (OIC)	Ms. Ma. Lourdes C. dela Cruz	(044) 792-0191 ; 668-1499	(044) 792-0191	O	9,195	Medium
369	Bustos	A. Raymundo St., Poblacion, Bustos, Bulacan 3007	Mr. Jose Adlai G. Tancangco	Mr. Restituto L. Raymundo	(044) 617-1514; (02) 299-8299	(044) 903-0301 ; (02) 299-8299	O	7,763	Big
15	Cabanatuan City	229 Brgy. Dicarma CVR, Cabanatuan City, Nueva Ecija 3100	Mr. Mario G. Villasan	Mr. Arturo G. Villasan	(044) 463-1643 to 47 ; 964-2274	(044) 463-1643 / 1646	O	26,903	Big
505	Cabangan	Dolores, Cabangan, Zambales 2203	Engr. Honorio L. Dilag, Jr.	Ms. Dominga R. Avizo	(0916) 350-0551		O	734	Small
414	Cabiao	San Juan South, Cabiao, Nueva Ecija 3107	Engr. Manuel L. Lugtu	Engr. Manuel Ortiz	(044) 486-3678	(044) 486-5615 / 3678	O	3,200	Average
140	Calumpit	Balungao, Calumpit, Bulacan 3003	Engr. Efrén Z. Red	Mr. Arthur M. Carlos	(044) 675-2380 / 2550 / 1453	(044) 202-5125	O	15,133	Big
43	Camiling	Luna St., Poblacion E, Camiling, Tarlac 2306	Engr. Emilio T. Julian	Mr. Federico L. Manuel, Jr.	(045) 934-0284 / 0304 / 1491	(045) 934-1907	O	6,359	Big
593	Candaba	B. Aquino Ave., Sitio 7, Pulong Plazan, Candaba, Pampanga 2013	Engr. Francis G. Vinuya	Dr. Ponciano M. Gatabontan, Jr.			O	1,236	Small
541	Candelaria	Poblacion, Candelaria, Zambales 2212	Ms. Virginia Q. Ferrer	Mr. Gervacio Sales, Jr.	(0917) 396-1074		O	470	Small
262	Capas	Municipal Hall, Capas, Tarlac 2315	Mr. Leonardo J. Panlican	Dr. Francisco Oco			NO		

551	Castillejos	Mun. Health Ctr. Compd., San Agustin, Castillejos, Zambales 2208	Engr. Dominador A. Gallardo (OIC)	Dr. Emily S. Camus (Acting Chair)	(047) 624-1453	(047) 624-1453	O	874	Small
288	City of Malolos	Poblacion, City of Malolos, Bulacan 3000	Mr. Nicasio C. Reyes	Mr. Romeo M. Cruz	(044) 791-4539 / 3562	(044) 791-4539	O	35,458	Medium
40	City of San Fernando	B. Mendoza St., City of San Fernando, Pampanga 2000	Engr. Jorge P. Gumba	Dr. Enrica S. Reyes	(045) 961-3546	(045) 963-3729	O	21,335	Large
134	Concepcion	Jacinto St., San Nicolas, Concepcion, Tarlac 2316	Engr. Rolando T. Estacio	Mr. Romeo P. Sablan	(045) 923-0430	(045) 923-1576	O	6,015	Big
224	Cuyapo	Multi-Purpose Bldg., M.L. Quezon Ave., Cuyapo, Nueva Ecija 3117	Engr. Gil E. Esteban	Mr. Jose I. Hidaigo, Sr.	(044) 608-0241	(044) 608-0237	O	1,200	Small
409	Dinalupihan	Pag-asa, Kataasan, Dinalupihan, Bataan 2110	Mr. Virgilio P. Manailii	Mr. Francisco Rey C. Cuartero, Jr.	(047) 481-1444 / 3718	(047) 481-3717	O	6,095	Medium
408	Dipaculao	Gen. Luna St., North Pob., Dipaculao, Aurora 3203	Mr. Johnny M. Mactal	Mr. Gregorio Baturi			O	554	Small
256	Floridablanca	Rizal St., Pob., Floridablanca, Pampanga 2006	Mr. Jeffrey C. Lintag	Atty. Roseller T. Logronio	(045) 970-0337 / 1466	(045) 970-1097	O	10,544	Big
493	Gabaldon	Gabaldon, Nueva Ecija 3131	Mr. Amado Villamanto	Mr. Francisco L. Baluyot			NO		
21	Gapan City	Tinio St., San Vicente, Gapan City, Nueva Ecija 3105	Engr. Edmundo T. Estacio (IGM)	Mr. Raymundo C. Matias	(044) 976-2040	(044) 976-1823	O	3,318	Average
353	Gen. M. Natividad	Pob., Gen. M. Natividad, Nueva Ecija 3125	Ms. Mary Jane S. Vera	Engr. Ferdinand B. Yango			O	395	Small
191	Gen. Tinio	Pob. Central, Gen. Tinio, Nueva Ecija 3104	Ms. Jocelyn C. Pajarillaga	Atty. Celso P. Abesamis	(044) 973-0290	(044) 973-0290	O	1,859	Average
222	Gerona	Don Pedro Simeon St., Gerona, Tarlac 2302	Mr. Eduardo D.L. Tañedo	Mr. Oscar T. Sison	(045) 608-0407	(045) 608-0407	O	1,859	Small
46	Guagua	#40 San Nicolas St., Guagua, Pampanga 2003	Mr. Eduardo P. Rodriguez	Mr. Marcelino C. Jiao	(045) 900-0547 ; 963-7602	(045) 900-2949	O	8,779	Medium
295	Guimba	Cor. Faigal & Danzalan Sts., Guimba, Nueva Ecija 3115	Engr. Felixberto C. Legarda	Dr. Armesto S. Corpuz, Sr.	(044) 611-1207	(044) 611-0141	O	2,800	Average
31	Hagonoy	G. Pangamban St., Sto. Niño, Hagonoy, Bulacan 3002	Engr. Celestino S. Vengco	Mr. Roldan R. Umali	(044) 793-0019 / 0433 / 1409	(044) 793-2524	O	23,428	Big
286	Hermosa	Door 2, Jorge Apt., Magsaysay St., Hermosa, Bataan 2111	Engr. Charlito G. Rodriguez (IGM)	Engr. Enrique Q. Gita (IB)	(047) 491-2472	(047) 491-2472	O	1,793	Average
238	Iba	Rizal St., Zone 6, Iba, Zambales 2201	Engr. Adonis J. Zaragoza, Jr.	Dr. Feliciano A. Balonso	(047) 811-1332	(047) 811-1332	O	1,273	Small
290	Jaen	Poblacion, Jaen, Nueva Ecija 3109	Engr. Lamberto L. Roxas, Jr.	Ms. Emiliana C. Garcia	(044) 486-2889	(044) 486-2889	O	1,929	Small
603	Licab	San Cristobal, Licab, Nueva Ecija 3112	Ms. Nenita B. Javier	Mr. Jovencio D. Lacamento	(0917) 8030125		O	400	Small
379	Limay	R. Ambrosio St., Townsite, Limay, Bataan 2103	Engr. Anthenor R. Garcia	Mr. Raul E. Escaler	(047) 244-5274	(047) 244-5274	O	5,315	Big
605	Llanera	Llanera, Nueva Ecija 3126					NO		
232	Lubao	San Nicolas I, Lubao, Pampanga 2005	Ms. Evelina S. Galicia	Mr. Danilo B. Capitulo	(045) 971-6656	(045) 971-6656	O	6,173	Medium
316	Lupao	Lupao, Nueva Ecija 3122					NO		
61	Mabalacat	0255 McArthur Hi-way, Mabiga, Mabalacat, Pampanga 2010	Atty. Francis A. Dimaliwat	Mr. Diosdado T. Pangilinan	(045) 331-7423 / 7404 / 7120	(045) 331-7423; 626-0838	O	24,236	Large
171	Macabebe	Poblacion, Macabebe, Pampanga 2018	Mr. Rene B. Bernarte	Mr. Antonio F. Pangan, Jr.	(045) 921-1203	(045) 921-0797	O	3,818	Small
475	Maria Aurora	Maria Aurora, Aurora 3202	Mr. Nicasio G. Gatchalian	Engr. Jaime S. Gose, Sr.			NO		
227	Marilao	11 T. Sandico St., Pob. 2, Marilao, Bulacan 3019	Mr. Fernando L. Diaz	Mr. Alberto S. Ascona, Jr.	(044) 711-1529	(044) 711-4423	O	14,325	Average

48	Mariveles	Prov'l Road, San Isidro, Mariveles, Bataan 2105	Engr. Jimmy L. Gonzales	Mr. Rosaura C. Liloc	(047) 935-4635 / 5561	(047) 935-5561	O	11,185	Big
320	Masantol	San Nicolas, Masantol, Pampanga 2017	Mr. Rolando B. Tolentino	Mr. Wilfredo P. Manansala	(045) 981-1306	(045) 981-1306	O	1,170	Small
430	Masinloc	Estrella St. cor. Nat'l Hi-way, Masinloc, Zambales 2211	Mr. Rene E. Edora	Ms. Angelita G. Ermita	(047) 821-1248	(047) 821-1248	O	1,750	Small
335	Mayantoc	Poblacion Norte, Mayantoc, Tarlac 2304	Engr. Cipriano P. Bautista	Mr. Noel L. Tolentino			O	941	Small
251	Meycauyan	Poblacion, City of Meycauyan, Bulacan 3020	Engr. Mariano C. Sangalang, Jr.	Mr. Feliciano G. Donato	(044) 840-4503 / 7413	(044) 840-4506	O	15,238	Big
60	Moncada	Poblacion 1, Moncada, Tarlac 2308	Engr. Rogelio B. Mina, Jr.	Mr. Federico R. Apdan	(045) 601-0407	(045) 601-0407	O	3,416	Average
264	Morong	Burgos St., Poblacion, Morong, Bataan 2108	Engr. Danilo T. Basilio (IGM)	Atty. Rebecca A. Barbo (IB)			O	330	Small
328	Muñoz	E. Bayuga St., Science City of Muñoz, Nueva Ecija 3119	Engr. Rogelio L. Miguel	Mr. Edgardo S. dela Cruz	(044) 456-0599 ; 945-0328	(044) 456-5063	O	2,865	Medium
261	Norzagaray	Brgy. Maticic, Norzagaray, Bulacan 3013	Engr. Aimer B. Cruz	Engr. Jose C. Mendoza	(044) 694-0799	(044) 694-0799	O	6,818	Medium
186	Obando	P. Sevilla St., Catanghalan, Obando, Bulacan 3021	Engr. Leonardo C. Landayan	Mr. Pancrasio F. dela Cruz	(02) 293-0609 ; 294-0966 to 68	(02) 293-0609 ; 294-0967	O	8,090	Average
54	Orani	Centro Uno, Orani, Bataan 2112	Mr. Benigno P. Andres	Dr. Godofredo B. Galicia, Jr.	(047) 431-1364 / 1262 ; 638-1500	(047) 431-1364	O	5,883	Big
527	Orion	National Road, Balagtas, Orion, Bataan 2102	Mr. Crispin Q. Tria	Rev. Leonardo R. Carlos	(047) 244-6756	(047) 244-6756	O	3,117	Small
529	Palauig	West Poblacion, Palauig, Zambales 2210	Mr. Romel Y. del Fierro	Mr. Fernando A. Reyes, Jr.			O	390	Small
343	Palayan City	Brgy. Malate, Palayan City, Nueva Ecija 3132	Engr. Gerardo Lope L. Calling	Ms. Carmen T. Siblag	(044) 958-1773	(044) 958-1773	O	1,374	Small
271	Pandi	Sergio Osmeña St., Poblacion, Pandi, Bulacan 3014	Ms. Elvira B. Santos	Engr. Marcelino S. Santos	(044) 661-1050	(044) 661-1050	O	1,200	Small
58	Paniqui	Monte Square Bldg., Burgos St., Paniqui, Tarlac 2307	Mr. Raden C. Santillan	Ms. Rosalina Y. Dy	(045) 931-0293 / 0889	(045) 931-0889	O	5,560	Average
509	Pantabangan	Pantabangan, Nueva Ecija 3124					NO		
306	Peñaranda	P. Padilla St., Poblacion 1, Peñaranda, Nueva Ecija 3103	Engr. Marlon J. Abesamis	Mr. Gil A. Salazar, Sr.	(044) 486-4049	(044) 486-4049	O	2,928	Medium
277	Plaridel	A.C. Reyes St., Plaridel, Bulacan 3004	Ms. Gertrudes D. Dumaguin (Actg)	Atty. Isagani C. Ramos	(044) 795-0102 / 1613	(044) 670-2725	O	10,223	Big
402	Porac	Model Community, Brgy. Pio, Porac, Pampanga 2008	Engr. Gil R. Manalastas	Engr. Rommeo Duya	(045) 329-3182	(045) 329-3182	O	2,200	Small
265	Pullilan	Brgy. Cutcot, Pullilan, Bulacan 3005	Mr. Amado E. Cruz, Jr.		(044) 676-0180		O	6,000	Small
566	Pura	Pura, Tarlac 2312					NO		
482	Ramos	Poblacion Center, Ramos, Tarlac 2311	Mr. Manuel E. Macaraeg	Mr. Remegio P. Soriano	(045) 931-1905	(045) 931-1905	O	952	Small
326	Rizal	24 Villanueva St., Rizal, Nueva Ecija 3127		Mr. Hermogenes I. Imperio			NO		
131	San Antonio	Poblacion, San Antonio, Nueva Ecija 3108	Ms. Celicidad P. Gamboa	Mr. Roberto R. Crisostomo	(044) 486-3556	(044) 486-3556	O	2,532	Small
152	San Antonio	Brgy. Rizal, San Antonio, Zambales 2206	Mr. Jose M. Santiago	Mr. Mariano E. Pascasio	(047) 913-4108	(047) 913-4108	O	1,142	Small
472	San Felipe	Abad St., Brgy. E. Feria, San Felipe, Zambales 2204	Engr. Arsenio C. Pagal	Mr. Luis C. Garcia	(047) 913-4511	(047) 913-3309	O	1,715	Small
273	San Ildefonso	Don Pedro Borja Subd., Pob., San Ildefonso, Bulacan 3010	Mr. Galo Antonio V. Violago	Mr. Ariston V. Francisco	(044) 901-1060 ; 677-0483	(044) 901-1060	O	5,669	Medium

260	Atimonan	J. Andres St., Zone IV, Atimonan, Quezon 4331	Mr. Jose T. Marasigan	Atty. Ricardo Z. Verdán	(042) 316-5280	(042) 316-6100	O	1,438	Small
109	Balayan	F. Unson St., Balayan, Batangas 4213	Mr. Conrado S. Lopez	Engr. Ernesto S. Medrano	(043) 407-0374; 211-4239	(043) 407-0374	O	2,603	Small
8	Batangas City	Km. 4, Brgy. Alangilan, Batangas City 4200	Ms. Yolanda B. Oyao	Mr. Wilfrido G. Jacinto	(043) 783-6537; 783-1811	(043) 783-6537 / 1811	O	24,536	Large
581	Burdeos	Burdeos, Quezon 4340					NO		
596	Cabuyao	2/F. OSCA Bldg., Municipal Compound, Cabuyao, Laguna 4025	Mr. Ernesto D. Dimaunahan	Mr. Martin M. Gomez	(049) 832-7959	(049) 832-7959	O	1,421	Small
29	Calamba	Lakeview Subd., Halang, Calamba, Laguna 4027	Engr. Alberto M. Cervancia	Engr. Nestor J. Liquido	(049) 545-1614 / 2863 / 2728	(049) 545-6382 / 9752	O	34,235	Very Large
78	Calauag	Maharlika Hi-way, Brgy. Santa Maria, Calauag, Quezon 4318	Ms. Nelia C. Avila	Mr. Domingo L. Lim	(042) 301-7548	(042) 301-7548	O	2,432	Small
561	Carmona	Block 8, Lot 8, Cityland, Mabuhay, Carmona, Cavite 4116	Mr. Edison L. Sarmiento, Jr.	Mr. Leopoldo A. Diaz, Jr.	(046) 430-0832	(046) 889-0091	O	5,707	Big
531	Catanauan	171 Bonifacio St., Catanauan, Quezon 4311	Ms. Veronica Y. Cuervo	Mr. Renato DLR. Pido	(042) 315-8153		O	1,027	Small
599	Cullion	Cullion, Palawan 5315					NO		
83	Dasmariñas	Camerino Avenue, Zone I, Dasmariñas, Cavite 4114	Engr. Alfredo S. Silva	Mr. Raymundo M. Reyes	(046) 416-0509 / 1236 / 0596	(046) 416-1238 / 3147	O	83,062	Very Large
462	Dolores	J.P. Herrera Sr. St., Silangan, Dolores, Quezon 4326	Engr. Percy R. Gaurano	Ms. Cosette Giselle Calayag	(042) 565-6102	(042) 565-6324 (request)	O	1,144	Small
555	Gen. E. Aguinaldo	#3020 Real St., Gen. E. Aguinaldo, Cavite 4124	Engr. Florencio D. Mendoza	Mr. Emmanuel I. Astillero	(046) 896-1006 / 1153		O	1,938	Small
393	Gen. Mariano Alvarez	No. 128 Cong'l Road, Poblacion 2, Gen. Mariano Alvarez, Cavite 4117	Ms. Adelina T. Torralba	Engr. Cesario R. Mullet	(046) 890-2401 / 0238 / 0239	(046) 890-2401	O	9,526	Big
303	Guinayangan	Brgy. Calimpak, Pob., Guinayangan, Quezon 4319	Engr. Antonieto C. Pujalte	Mr. Arnulfo P. Quistro	(042) 303-4188 / 4189	(042) 303-4189	O	2,054	Small
79	Gumaca	RM Bldg., A. Bonifacio St., Brgy. Tabing Dagat, Gumaca, Quezon 4307	Ms. Melinda I. Oliveros	Ms. Estelita V. Rodelas	(042) 421-1726	(042) 421-1449 (request)	O	612	Small
99	Indang	508 De Ocampo St., Pob. III, Indang, Cavite 4122	Mr. Elpidio E. Legaspi	Ms. Edilisa G. Creus	(046) 415-0318 / 1649	(046) 415-0318	O	3,761	Medium
229	Infanta (Quezon)	Cor Rizal & Niebres Sts., Infanta, Quezon 4336	Engr. Mario Macatangay (IGM)	Mr. Wilfredo M. Feleo	(042) 535-3926	(042) 535-3926	O	3,146	Small
38	Laguna	National Highway, Brgy. Anos, Los Baños, Laguna 4030	Engr. Pantaleon L.J. Tabanao	Dr. Emilio U. Quintana	(049) 536-0331 / 0127 / 0661	(049) 536-0331 / 4127	O	22,129	Large
169	Lemery	Carnero Sub., Brgy. Sangalang, Lemery, Batangas 4209	Engr. Hydee dela Luna-Ramirez	Dr. Ferdinand M. Macababab	(043) 411-1208 / 4552 / 4607	(043) 411-4552	O	6,625	Big
609	Lian	Kapitan Kiko St., Lian, Batangas 4216	Engr. Sherwin Napoleon M. Jonson	Engr. Cesar Rivera	(043) 215-2972	(043) 333-0028 (request)	O	264	Small
422	Lobo	A. Mabini St., Poblacion, Lobo, Batangas 4229	Mr. Danilo M. Perez	Ms. Margarita Dativa M. Nadurata	(0917) 570-2597	(0919) 547-0631	O	1,650	Small
589	Looc	Looc, Occidental Mindoro 5111					O		
45	Lopez	210 Gen. Yngente Ave., Lopez, Quezon 4316	Engr. Leonardo B. Villaseñor	Mr. Wenifred A. Armenta	(042) 841-1175; 302-5233	(042) 841-1175	O	2,844	Small
93	Mabini	F. Castillo Blvd., Poblacion, Mabini, Batangas 4202	Mr. Modesto Franklin C. Castillo	Mr. Genciano T. Maramot	(043) 487-0203	(043) 487-0203	O	3,924	Small

580	Macalelon	Macalelon, Quezon 4309	Mr. Simeon V. Aldea III	Ms. Leona M. Samadan	(042) 393-4283	(042) 393-4448 (request)	O	268	Small
451	Magdalena	Magdalena, Laguna 4027					NO		
503	Maragondon	Col. Riel St., Poblacion II-A, Maragondon, Cavite 4112	Mr. Manuel Ma. Angeles	Mr. Frando R. Regino	(046) 412-0787 / 1575	(046) 412-0787	O	3,135	Medium
298	Mauban	Don Juanchito Ext., Brgy. Lual, Mauban, Quezon 4330	Engr. Julito C. Talastas	Dr. Rosendo B. Medenilla	(042) 784-0527	(042) 784-0527	O	2,212	Small
424	Mendez	Dimaranan St., Brgy. I, Mendez, Cavite 4121	Mr. Alexander S. Manalo	Ms. Irma T. Mendoza	(046) 413-0245	(046) 413-0245	O	3,354	Medium
12	Metro Lipa	Int. B. Morada Ave., Lipa City, Batangas 4217	Engr. Hermogenes M. Ilagan	Mr. Eduardo D. Seguis mundo	(043) 756-1118 / 1670 / 1611 / 6972	(043) 756-3450	O	44,979	Large
144	Morong	T. Claudio St., Paglabas, San Pedro, Morong, Rizal 1960	Mr. Crispin S. Gutierrez	Engr. Adorable G. Bautista	(02) 653-1184 ; 691-5822	(02) 691-5645	O	7,224	Big
155	Nasugbu	J.P. Laurel St., Brgy. 12, Nasugbu, Batangas 4231	Engr. Abelardo L. Rojas	Mr. Daniel M. Villafranca	(043) 931-1278 ; 412-0045	(043) 931-1278 ; 412-0045	O	5,000	Big
245	Naujan	Poblacion I, Naujan, Oriental Mindoro 5204	Mr. Rio M. Albufera	Mr. Ruperto V. Ordinario	(043) 208-3127	(043) 208-3127	O	839	Small
75	Odiongan	G/F Atienza Bldg., M.L. Quezon St., Liwanag, Odiongan, Romblon 5505	Engr. Carlos M. Formilleza	Mr. Antonio L. Atienza	(042) 567-5101	(042) 567-5101	O	2,003	Small
122	Pagsanjan	# 52 J. P. Rizal St., Pagsanjan, Laguna 4008	Engr. Alex C. Paguio	Engr. Fred V. Capistrano	(049) 808-4298 / 6953	(049) 808-4321	O	5,020	Medium
518	Pakil	Burgos St., Pakil, Laguna 4017	Mr. Edgardo R. Balita	Mr. Virgilio R. San Gaspar	(049) 557-0266	(049) 557-0266	O	1,430	Small
487	Pililla	National Road, Bagumbayan, Pililla, Rizal 1910	Mr. Paulino J. Rafanan	Mr. Valentin E. Paz	(02) 654-0817	(02) 654-4089	O	4,056	Medium
327	Pinamalayan	Brgy. Sta. Rita, Pinamalayan, Or. Mindoro 5208	Ms. Rafaela M. Galit	Engr. Enrico A. Axalan	(043) 284-3203	(043) 284-3203	O	2,596	Small
471	Pitogo	Pitogo, Quezon 4308					NO		
96	Pola	Brgy. Zone II, Bayanan, Pola, Oriental Mindoro 5206	Ms. Rebecca R. Segovia	Ms. Lilia L. Matining			O	771	Small
600	Pollillo	PACD Bldg., San Jose St., Pollillo, Quezon 4339	Mr. Tolentino R. Acquioben	Ms. Enerita G. Gaela	(042) 314-8528	(042) 314-8544	O	993	Small
26	Puerto Princesa City	263 Rizal Ave., Puerto Princesa City, Palawan 5300	Mr. Antonio Jesus R. Romasanta	Engr. Antonio G. Goh	(048) 433-6802 / 5032 / 2408 / 9745	(048) 433-6803	O	19,235	Big
513	Quezon	Quezon, Palawan 5304					NO		
17	Quezon Metro	Ibabang Dupay, Red V, Lucena City, Quezon 4301	Mr. Enrico B. Pasumbal	Atty. Gilbert D. Camaligan	(042) 373-3692 ; 710-2965	(042) 373-3692	O	33,516	Very Large
64	Romblon	Roxas St., Romblon, Romblon 5500	Ms. Edna P. Martos (OIC)	Col. Teodoro M. Martinez (Ret.)	(042) 472-8218	(042) 472-8218	O	1,944	Small
111	Rosario	Y. Zuño St., Rosario, Batangas 4225	Engr. Cynthia T. Luna	Atty. Romeo T. Reyes	(043) 321-1532	(043) 321-1532	O	3,700	Average
334	Roxas	Poblacion, Roxas, Oriental Mindoro 5212	Engr. Danilo B. Siñel	Engr. Cezur Jimenez	(043) 289-2122	(043) 289-2122	O	397	Small
449	Roxas	Jacinto St., Brgy. II, Roxas, Palawan 5308	Engr. Fernando N. Ramirez	Mr. Pedro R. Abid	(048) 723-0460		O	950	Small
197	Sablayan	C. Salvo St., Brgy. Buenavista, Sablayan, Occ. Min. 5104	Mr. Jose M. Abeleda, Jr.	Mr. Alfredo R. Ventura	(0929) 302-8560		O	1,487	Small
150	San Agustin	Poblacion, San Agustin, Romblon 5501	Mr. Roland F. Fetalco (OIC)	Mr. Roland F. Fetalco			O	200	Small
62	San Jose	Mun. Compd., Brgy. 7, San Jose, Occ. Mindoro 5100	Mr. Renato G. Gataz	Ms. Mary Ann D. Reyes	(043) 491-1357 / 1972 / 4429	(043) 491-4430	O	5,255	Large

55	San Juan	005 Dandan St., San Juan, Batangas 4226	Mr. Deo Medel B. Magpantay	Ms. Lilian P. Alcantara	(043) 341-1003 ; 575-3512	(043) 575-3512	O	2,341	Average
4	San Pablo City	Maharlika Hi-way, Brgy. San Gabriel, San Pablo City, Laguna 4000	Engr. Roger F. Borja	Ms. Lerma S. Prudente	(049) 562-2750 to 51 / 7568 to 70	(049) 562-2750 to 51	O	26,674	Big
170	San Pedro	110 J. P. Rizal St., San Pedro, Laguna 4023	Mr. Guillermo T. Pili, Jr.	Engr. Rosendo O. Chaves	(02) 847-7470 / 6086 / 4671	(02) 847-1629	O	24,198	Large
127	Santa Cruz	A. Mabini St., Santa Cruz, Laguna 4009	Engr. Nestor E. Dionisio	Ms. Diana C. Pangamban	(049) 808-1953	(049) 808-0190	O	6,333	Big
336	Santa Maria	Burgos St., Santa Maria, Laguna 4022	Engr. Roldolfo R. Meer				O	1,000	Small
367	Santo Tomas	Malvar Ave., Brgy. 3, Santo Tomas, Batangas 4234	Engr. Roldolfo R. Meer				O	6,800	Small
115	Silang	M. H. del Pilar cor. E. Montoya Sts., Silang, Cavite 4118	Mr. Bonifacio B. dela Cruz (OIC)	Ms. Leticia M. Bayla	(046) 414-0240 ; 865-2456 ; 511-0359	(046) 414-0886	O	23,822	Big
395	Similaoan	Bibiana Bldg., E. Castro St., Similaoan, Laguna 4019	Engr. Isidoro V. Realeza	Ms. Evelia V. Religioso	(049) 813-0260	(049) 813-0260	O	3,257	Small
443	Socorro	Zone 4, Pob., Socorro, Oriental Mindoro 5207	Engr. Delfin J. Sigue, Jr.	Mr. Delfin Y. de Castro, Sr.			NO		
516	Taal	Calle V. Ilustre cor. Calle C. Sanchez, Taal, Batangas 4208	Engr. Gregorio V. Savadera	Mr. Vicente A. dela Rosa	(043) 421-1330 / 1334	(043) 421-1330	O	3,057	Average
37	Tagaytay City	E. Aginaldo Hi-way, Maharlika West, Tagaytay City, Cavite 4120	Engr. Jose M. Vergara (Acting)	Mr. Alberto C. Dy	(046) 413-1312 / 1265 (GM's DL); 860-0454	(046) 413-1122 / 1257	O	9,989	Big
130	Tagkawayan	Gulf View Subd., Pob., Tagkawayan, Quezon 4321	Mr. Cirilo T. Frondoso	Mr. Joseph A. Pua	(042) 304-8128 / 8729	(042) 304-8128	O	1,834	Medium
333	Tanauan	Pres. Laurel Hi-way, Tanauan City, Batangas 4232	Engr. Apolinario C. Hernandez	Engr. Alfredo P. Torres	(043) 778-1155 / 5778	(043) 405-2056	O	10,585	Big
88	Tanay	No. 41 F.T. Catapusan St., Tanay, Rizal 1909	Engr. Armando H. Bongat	Arch. Alfredo B. Alfonso	(02) 654-0027 / 0033 / 3891	(02) 654-4098	O	10,698	Big
358	Tanza	A. Soriano Hi-way, Tanza, Cavite 4108	Engr. Ricardo R. Pulido	Ms. Angelina V. Nibungco	(046) 484-1814 ; 505-2906	(046) 505-2906	O	7,274	Big
470	Taysan	I. G. Sulit, Sr. St., Pob. East, Taysan, Batangas 4228	Mr. Carmelito E. Redelicia	Mr. Josecito L. Alfajaro			O	1,533	Small
604	Taytay	Taytay, Palawan 5312					NO		
536	Teresa	Omega Subd., San Gabriel, Teresa, Rizal 1880	Mr. David T. San Diego	Engr. Enrique L. Sengson	(02) 344-1093		O	3,243	Average
151	Tiaong	Brgy. Lumignon, Tiaong, Quezon 4325	Engr. Perseverando T. Atienza	Mr. Felipe B. Ciceron	(042) 545-9170 ; 652-1711	(042) 652-1711	O	2,198	Small
574	Trece Martires City	Cavite Prov'l Capitol Site, Trece Martires City, Cavite 4109	Mr. Tito S. delos Santos	Dr. Veronica G. de Sagun	(046) 419-2664 to 65	(046) 419-2664	O	11,596	Big
377	Tuy	Luna St., Tuy, Batangas 4214	Mr. Estanislao C. Filler	Mr. Eliseo R. Bacalzo	(043) 332-0121	(043) 332-0121	O	1,798	Small
87	Unisan	Brgy. F. de Jesus, Unisan, Quezon 4305	Engr. Darnilo C. Altea	Engr. Luisito G. Ledesma	(042) 549-8488		O	400	Small

REGION 5											
Comprises: Albay, Camarines Norte, Camarines Sur											
Catanduanes, Masbate & Sorsogon - 46 / 37											
137	Aroroy	Apalit St., Aroroy, Masbate 5414	Engr. Pedrito E. Corpus	Mr. Jimmy J. Chan	(0910) 802-5447						
313	Baao	2/F Public Market Bldg., San Roque, Baao, Cam. Sur 4432	Mr. Vicente Vic B. Robosa	Mr. Zandro O. Babol	(054) 266-3161 / 3124						500 2,072 Small Small
135	Bacacay	Hindi, Bacacay, Albay 4509	Ms. Alma B. Calleja	Mr. Roberto Cabredo	(052) 558-3228						1,858 Small
478	Bagamanoc	Bagamanoc, Catanduanes 4807									NO
445	Balatan	Siramag, Balatan, Camarines Sur 4436	Ms. Haydee D. Borja	Mr. Rogelio O. Toriente							O 412 Small
455	Baras	San Jose St., Baras, Catanduanes 4803	Engr. Seth G. Carranza								NO
437	Bato	Santiago, Bato, Camarines Sur 4435	Engr. Paul Raymond L. Bonnevie	Mr. Domingo R. Doctolero	(054) 277-4269						O 1,538 Small
101	Bato	Rizal Crossing, Bato, Catanduanes 4801	Ms. Amelia T. Bongalos	Mr. Zosimo T. Reyes, Jr.	(056) 411-1323						O 1,253 Small
22	Bulan	Zone 4, De Vera St., Bulan, Sorsogon 4706	Engr. Arnulfo M. Tecson	Ms. Maria Paz G. Bajaro	(056) 411-1323						O 4,456 Average
314	Calabanga	San Pablo, Calabanga, Camarines Sur 4405	Engr. Ajerco C. Comia (IGM)	Atty. Edelwina DG. Parungao (IB)	(054) 255-4041 / 470-2000						O 2,247 Small
125	Camalig	Brgy. 2, Camalig, Albay 4502	Engr. Ramon E. San Jose (IGM)	Mr. Avelino Castillo (IB)	(052) 826-0308; 484-1247						O 1,173 Small
9	Camarines Norte	Vinzons Avenue, Pandan, Daet, Camarines Norte 4600	Ms. Ma. Antonia B. F. Boma	Atty. Esteban P. Panotes	(054) 721-1810; 571-2315						O 20,089 Big
448	Capalonga	Capalonga, Camarines Norte 4607	Mr. Felix Maralit								NO
366	Casiguran	J. B. Alegre cor. A. Halcon Sts., Central, Casiguran, Sorsogon 4702	Engr. Eduardo P. Tejada	Mr. Carlos F. Baloloy							O 3,000 Small
172	Daraga	Sa. Maria St., San Roque, Daraga, Albay 4501	Atty. Joey M. Marcellana	Mr. Lorenzo L. Reyeg	(052) 483-3232 / 824-1256						O 7,709 Medium
576	Del Gallego	Pop., Zone 1, Del Gallego, Camarines Sur 4411	Dr. Evelyn B. Garcia	Rev. Fr. Ian S. Trillanes	(042) 304-8543						O 861 Small
72	Donsol	Poso, Donsol, Sorsogon 4715	Mr. Antonio M. Arellano	Mr. Estelito L. de Guzman							O 986 Small
136	Gubat	538 Manook St., Gubat, Sorsogon 4710	Engr. Salvador F. Villaroya, Jr.	Dr. Ruben E. Lelis	(056) 311-1319						O 4,800 Medium
91	Iriga City	Rufino Llagas, Sr. St., San Roque, Iriga City, Albay 4431	Engr. Ajerco C. Comia (IGM)	Mr. Gudencio C. Asanza, Jr.	(054) 299-2220						O 8,329 Medium
586	Irosin	M.H. del Pilar St., Irosin, Sorsogon 4707	Mr. Edwin G. Gajo	Atty. Arnaldo M. Espinas (IB)							O 1,800 Small
575	Jose Panganiban	Jose Lim Bldg., Pop. North, Jose Panganiban, Camarines Norte 4606	Engr. Eduardo C. Campita	Ms. Priscilla G. Mariano	(054) 731-1676						O 1,913 Small
173	Legazpi City	Bitano, Legazpi City, Albay 4500	Dr. Raul L. Chua	Dr. Kerwin T. Sis	(052) 480-9395; 820-1175						O 16,069 Big
606	Libmanan	Bagumbayan, Libmanan, Camarines Sur 4407	Engr. Rodolfo A. Jimenez	Mr. Ferdinand Osio	(054) 451-2575						O 2,342 Small
149	Ligao City	Napera St., Dunao, Ligao City, Albay 4504	Mr. Manolito T. Mateum	Dr. Hilario T. Mateo	(052) 837-1165 ; 485-1399						O 5,089 Average
361	Mandaon	Mandaon, Masbate 5411									NO
69	Masbate-Mobo	Capitol Road F, Masbate City, Masbate 5400	Engr. Quintin C. Catabui III (IGM)	Engr. Emmanuel B. Malicdem (IB)	(056) 333-6310						O 3,745 Medium

165	Balintawak-Escalante	Rm. 207-208, 2/F Pub. Mkt. Bldg., Escalante City, Neg. Occ. 6124	Ms. Lilian M. Arias	Mr. Almer A. Zerrudo (IB)	(034) 454-0563	(034) 454-0563	O	1,337	Small
318	Banate	Rizal St., Poblacion, Banate, Iloilo 5010	Engr. Felix O. Bagsit	Mr. Pepito G. Jasppe	(033) 362-0197	(033) 362-0197	O	920	Small
497	Barbaza	Jinalinan, Barbaza, Antique 5706	Mr. Adolfo S. Condes	Mr. Jose A. Capaque	(0927) 559-1985		O	528	Small
371	Barotac Viejo	Tupas St., Poblacion, Barotac Viejo, Iloilo 5011	Mr. Parly B. Balleza	Ms. Brenda Angeles			O	330	Small
602	Belison	Belison, Antique 5701	Ms. Beverly S. Española (Acting)	Mr. Nephthali B. Chavoso	(0917) 305-1909		O	89	Small
103	Binalbagan	Brgy. San Teodoro, Binalbagan, Neg. Occ. 6107	Ms. Suzette E. Saragoza	Mr. Nilo G. Agustin	(034) 388-8428 / 8783	(034) 388-8783	O	2,700	Average
164	Buenavista	New Poblacion, Buenavista, Guimaras 5044	Engr. Dione J. Gabayoyo	Mr. Perfecto G. Habaña, Sr.	(033) 580-7689 / 8446	(033) 580-7689	O	1,815	Small
348	Bugasong	P. Moscoso St., Ilaya, Bugasong, Antique 5704	Ms. Elma T. Zamuraga	Ms. Lydia P. Panaguiton			O	806	Small
386	Cadiz City	Burgos St., Cadiz City, Neg. Occ. 6121	Mr. Jesus Pedro B. Zalduarriaga	Engr. Celwin L. Javelosa	(034) 493-0788 / 0688 / 0075	(034) 493-0788	O	5,838	Small
363	Calinog	Rizal St., Calinog, Iloilo 5040	Mr. Salvador M. Pasaporte	Engr. Jorge L. Santillan	(033) 347-1937	(033) 347-1937	O	800	Small
610	Cauayan	Cauayan, Negros Occidental 6112					NO		
375	Concepcion	Municipal Bldg., Concepcion, Iloilo 5013	Mr. Danilo Y. Balasbas	Ms. Teresita Q. Celestial	(033) 392-0314	(033) 392-0314	O	365	Small
616	Cuartero	Cuartero, Capiz					NO		
274	Culasi	F.Y. Lomugtang St., Culasi, Antique 5708	Mr. Ferdinand Perry S. Valente	Mr. Tito Jolampong	(036) 277-8433		O	1,302	Small
346	Dao	Dao, Capiz 5810	Mr. Jaime Lee	Ms. Lilian N. Asprer (IB)	(033) 351-0071 ; 529-7122	(033) 351-0071	O	2,711	Average
77	Dingle-Pototan	Cor. Dalipe-Sanico Sts., Dingle, Iloilo 5035	Engr. Rommel R. Falcon (IGM)				O		
345	Dueñas	Lagos St., Dueñas, Iloilo 5038	Engr. Edgar L. Lamera	Mr. Bertier R. Catalan	(033) 351-0165		O	501	Small
001-M	Dumangas-Barotac Nuevo	P.D. Monfort North, Dumangas, Iloilo 5006	Engr. Remus P. Braganza	Ms. Josefina B. Golez	(033) 361-2250 / 2095	(033) 361-2250	O	3,262	Medium
112	Dumarao	Poblacion Ilawod, Dumarao, Capiz 5812	Mr. Angelo S. Hidrosollo	Mr. Ramon C. Suerte	(036) 537-0076	(036) 537-0076	O	648	Small
360	Estancia	2/F New Public Market Bldg., E. Reyes Ave., Estancia, Iloilo 5017	Engr. Rodney L. Agregado	Ms. Ligaya A. Baylon	(033) 397-1056	(033) 397-1056	O	537	Small
389	Guimbal	Guimbal, Iloilo 5022					NO		
267	Hamtic	Poblacion 3, Hamtic, Antique 5715	Mr. Reynaldo Dy. Abapo	Mr. Romelito Autajay			O	290	Small
102	Himamaylan	Segovia St., Himamaylan, Negros Occidental 6108	Engr. Jaime E. Verano	Ms. Angelina G. Gayoso	(034) 388-3647	(034) 388-3647	O	3,131	Medium
434	Ibajay	Tayco St., Poblacion, Ibajay, Aklan 5613	Ms. Edna F. Magdaluyo (OIC)	Dr. Divina S. Ongkiko	(036) 289-2067	(036) 289-0003 (request)	O	109	Small
390	Igaras	Ezpeleta Sr., Igaras Public Market, Igaras, Iloilo 5029	Engr. Rosemary E. Ebreo	Mr. Florentino Emmanuel	(033) 315-6264	(033) 315-6264	O	270	Small
332	Ilog	Dancalan, Ilog, Negros Occidental 6109	Mr. Rufino G. Tondo	Engr. Bimi Padilla			O	241	Small
282	Isabela	Isabela, Negros Occidental 6128	Engr. Nathaniel H. Viaje	Mr. Andres Sonza			O	400	Small
323	Jamindan	Jamindan, Capiz 5808	Engr. Adolfo Robles, Jr.	Mr. Arthur Orbigo			NO		
226	Janiuay	Brgy. Jibolo, Janiuay, Iloilo 5034	Engr. Carmelo L. Masado	Mr. Romeo L. Lamzon	(033) 531-8498	(033) 531-8498	O	1,205	Small
289	Jordan	Nava St., Brgy. Rizal, Jordan, Guimaras 5045	Mr. Melchor F. Bibanco	Ms. Rhodina Socorro Galve	(033) 238-1288	(033) 238-1288	O	960	Small
50	Kabankalan City	Cor. Rizal-Tayum Sts., Kabankalan City, Neg. Occ. 6111	Engr. Aquiles M. Zayco, Jr.	Mr. Luis S. Azcona	(034) 471-2634	(034) 471-3462	O	3,185	Average

49	La Carlota City	Rizal St., La Carlota City, Neg. Occidental 6130	Mr. Norberto V. Baculina	Ms. Corazon Z. Pilar	(034) 460-2488	(034) 460-2641	O	6,580	Medium
281	La Castellana	Feria St., La Castellana, Neg. Occidental 6131	Engr. Ranulfo F.Yap	Ms. Hydrie G. Robles	(034) 485-0053	(034) 485-0053	O	1,223	Small
225	Lambunao	Municipal Bldg., Lambunao, Iloilo 5042	Mr. Pablo C. Leda, Jr.	Mr. Restituto J. Lastimoza	(033) 349-1237	(033) 349-1237	O	411	Average
431	Lemery	Lemery, Iloilo 5043	Mr. Marianito B. Alimo-ot (Actg.)	Mr. Sergio M. Masongsong	(033) 544-0011	(033) 544-0011	NO		
466	Leon	E. Capalla St., Leon, Iloilo 5026	Arch. Elmer L. Hollipas	Mr. Rodolfo Saavedra	(033) 331-0039	(033) 331-0039	O	675	Small
364	Libacao	Maianga St., Poblacion, Libacao, Aklan 5602	Ms. Elizabeth N. Zubiaga	Mr. Giovanni Y. Iquiz	(036) 273-2256	(036) 273-2256	O	520	Small
357	Maayon	Maayon, Capiz 5809	Engr. Josephine Orendez	Mr. Raymundo Distor			NO		
559	Malay	Brgy. Caticlan, Malay, Aklan 5608	Mr. Bartolome S. Bautista, Jr.	Mr. Rufo T. Sacapaño	(036) 288-7390	(036) 288-7390	O	791	Small
258	Malinao	Sta. Maria St., Poblacion, Malinao, Aklan 5606	Engr. Valeriano I. Dugcal, Jr.	Mr. Lidio I. Ituriaga	(036) 275-8040	(036) 275-8040	O	504	Small
356	Mambusao	Sta. Catalina St., Mambusao, Capiz 5807	Engr. Jessica M. Mansilla	Aty. Othello V. Navarra	(036) 647-0113 / 0121	(036) 647-0121	O	880	Small
234	Manapla	B. Gallo St., Manapla, Negros Occidental 6120	Engr. Rolando R. Ramos (IGM)	Aty. Rebecca A. Barbo	(034) 491-0013	(034) 491-0013	O	940	Small
71	Metro Iloilo	Bonifacio Drive, Iloilo City 5000	Engr. Edwin R. Reyes (IGM)	Aty. Norberto J. Posencion	(033) 337-4744 / 3272 / 8482	(033) 336-6538	O	29,401	Very Large
73	Metro Kalibo	C. Laserna St., Kalibo, Aklan 5600	Mr. Renato T. Albar	Mr. Edgar T. Isada	(036) 262-1783 ; 268-6828 / 4200	(036) 262-4285	O	15,326	Large
32	Metro Roxas	MRWD Bldg., Km. 1, Roxas City 5800	Engr. Pablo B. Bercilla (IGM)	Engr. Antonio B. Magtibay (IB)	(036) 621-0044 / 3215	(036) 621-5474 / 6083	O	18,838	Large
383	Miagao	Legaspi St., Miagao, Iloilo 5023	Engr. Bobby F. Montalban	Ms. Macrina N. Noble	(033) 315-8430	(033) 315-8430	O	447	Small
611	Murcia	Murcia, Negros Occidental 6129					NO		
446	New Lucena	Elvas St., New Lucena, Iloilo 5005	Mr. Hildebrand Gallaza	Mr. Vicente Quidato, Jr.			O	350	Small
259	Numancia	Laguinbanua West, Numancia, Aklan 5604	Engr. Antonio S. Gauriña (IGM)	Mr. Wilfredo M. Feleo	(036) 265-4451 ; 262-1610	(036) 262-1610	O	1,697	Average
523	Pandan	Mayor M. Dionela St., Centro Norte, Pandan, Antique 5712	Engr. Celso D. Tajanlangit	Mr. Prudencio C. Estoperez, Jr.	(036) 278-9288 / 9714	(036) 278-9288	O	2,100	Medium
63	Passi	Saligumba St., Passi City, Iloilo 5037					O	403	Small
296	Patnongon	Real St., Patnongon, Antique 5702	Ms. Nancy Grace F. Rafols	Mr. Miguel O. Oblima, Jr.	(036) 576-5524 ; (0905) 976-5524		O	693	Small
82	Pilar	Rizal St., Poblacion, Pilar, Capiz 5804	Mr. Anthony A. Villanueva	Dr. Gideon Ike R. Patricio			O	248	Small
372	Pontevedra	Isagani St., Brgy. Ilawod, Pontevedra, Capiz 5802	Mr. Leandro Antonio B. Capulso	Mr. Gilbert B. Villanueva	(036) 634-0102 / 0302	(036) 634-0302	O	973	Small
206	Pontevedra	Municipal Hall, Pontevedra, Negros Occidental 6105	Ms. Nelia M. Tan	Ms. Corazon Garbanzos	(034) 377-7273		O	365	Small
341	Pres. Roxas	Municipal Bldg., Pres. Roxas, Capiz 5803	Mr. Renato D. Golero	Mr. Elwin I. Corvera	(036) 527-3060 ; 323-1021	(036) 323-1143	O	742	Small
129	Sagay	Cor. Maria Lopez & Marañon Sts., Sagay City, Neg. Occ. 6122	Mr. Manfred M. Fuentesfina	Ms. Thelma M. Chiu	(034) 488-0219	(034) 488-0219	O	6,330	Average
607	San Enrique	San Enrique, Negros Occidental 6104					NO		
388	San Joaquin	No. 4, Rizal St., Poblacion, San Joaquin, Iloilo 5024	Ms. Ma. Cecilia S. Nieves	Mr. Timoteo S. Bacabac	(033) 314-7288		O	486	Small
249	Sibalom	Gonzales St., Sibalom, Antique 5713	Engr. Jonathan G. de Gracia	Mr. Rudini E. Venegas	(036) 543-7699 / 7606	(036) 543-7606	O	1,448	Small

598	Sibunag	Sibunag, Guimaras 5045	Mr. Glenn C. Antiporda	Mr. Rodolfo C. Lim	(034) 495-0163 / 5011	(034) 495-4125	NO	5,000	Medium
27	Silay City	Jose C. Locsin Ave., Silay City, Negros Occ. 6116	Ms. Rose Bañares (IGM)	Engr. Ephraim Jacildo (IB)			O	106	Small
252	Sipalay	Mercedes Blvd., Brgy. 11, Sipalay, Negros Occidental 6113	Engr. Manolito P. Mendoza, Jr.	Mr. Kenneth G. Tirthdas	(034) 495-0669 / 5091	(034) 495-5091	O	4,501	Medium
533	Talisay City	Bonifacio St., Talisay City, Negros Occ. 6115	Mr. Joaquin Tio	Atty. Zoilo Falco			NO		
368	Tapaz	Tapaz, Capiz 5814	Mr. Florencio Taleon	Mr. Ricardo Tantiado			NO		
510	Tigbauan	Tigbauan, Iloilo 5021	Mr. Jesse V. Ysulat	Mr. Bonifacio D. Josue			O	514	Small
257	Tobias Fornier	Rizal St., Pob. Norte, Tobias Fornier, Antique 5716	Engr. Carmelo T. Tabaquirao	Mr. Orlando T. Tacsagon	(033) 396-0436	(033) 396-0436	O	209	Small
595	Tubungan	Municipal Hall, Poblacion, Tubungan, Iloilo 5021	Engr. Paulino M. Cruz	Mr. Jose Maria Valentin S. Garcia	(034) 399-2865 / 3554	(034) 399-3554	O	4,212	Medium
70	Victorias	Quirino St., Victorias City, Negros Occidental 6119	Engr. Lauro S. Sonota	Mr. Glenn L. Solo	(033) 525-4354	(033) 525-4354	O	840	Small
508	Zarraga	Taos Puso Foundation Bldg., Real St., Zarraga, Iloilo 5004							
REGION 7									
Comprises: Bohol, Cebu,									
Negros Oriental & Siquijor									
- 22 / 17									
569	Ayungon	New Public Market Bldg., Ayungon, Negros Oriental 6210	Mr. Michael A. Ella	Mr. Gerardo M. Garcia	(035) 406-7023	(035) 406-6007	O	1,572	Small
530	Bais City	Door 1, Vicente Appt., Aglipay St., Bais City, Negros Oriental 6206	Mr. Evan Irish L. Acas	Mr. Frederick F. Sabate	(035) 541-5660 / 402-8263	(035) 402-8263	O	3,361	Small
489	Bantayan	Bantayan, Cebu 6052	Mr. Teresito Villacastin	Engr. Rudolfo Nolasco			NO		
221	Bayawan	Cor. Zamora & Nat'l. Hi-way, Bayawan, Neg. Or. 6221	Ms. Alma L. Abrasaldo	Engr. Eddie P. Tan	(035) 228-3349 / 531-0055	(035) 228-3349	O	2,540	Average
577	Bogo	San Vicente St., Bogo, Cebu 6010	Mr. Oscar E. Arcenas	Mr. Lee J. Verrallo	(032) 251-2896 / 434-9285	(032) 251-2896 ; 434-9285	O	3,653	Medium
452	Borbon	National Hiway, Poblacion, Borbon, Cebu 6008	Engr. Leonardo S. Lawas	Mr. Ben C. Sepulveda	(032) 432-5695	(032) 432-5695	O	1,848	Small
117	Carcar	San Vicente Ferrer St., Cogon, Carcar, Cebu 6019	Engr. Edward L. Remo	Atty. Democrito Barcenas	(032) 487-9141 / 8500 / 8525	(032) 487-9141	O	7,613	Medium
231	Carmen	Carmen, Bohol 6005					NO		
398	Clarin	Poblacion Centro, Clarin, Bohol 6330	Engr. Victoriano Z. Lerias	Mr. Emmanuel A. Sanchez	(0919) 680-1705		O	1,028	Small
436	Dalaguete	Sarmiento St., Dalaguete, Cebu 6022	Engr. Luisito A. Legaspi	Mr. Servillano Cisneros	(032) 484-8724	(032) 484-8724	O	3,200	Average
47	Dumaguete City	Circumferential Rd., Purok Kalubihan, Daro, Dumaguete City 6200	Mr. Esparato A. Dicen	Arch. Carlos B. Amasula, Jr.	(035) 225-0551 ; 422-6961	(035) 225-6677	O	20,173	Large
486	Madridejos	Madridejos, Cebu 6053					NO		
111	Metro Cebu	Magallanes - Lapu-Lapu Sts., Cebu City 6000	Engr. Armando H. Paredes	Mr. Juan Saul F. Montecillo	(032) 254-8434 to 39 ; 253-2670	(032) 254-5391	O	116,768	Very Large
142	Metro Siquijor	South Poblacion, Siquijor, Siquijor 6225	Engr. Steven J. Dandoy	Mr. Josue Monera	(035) 344-2167	(035) 344-2167	O	2,264	Small
476	Moalboal	Poblacion East, Moalboal, Cebu 6032	Engr. Richard M. Sungcad	Mr. Alberto Maling-on	(032) 474-8068	(032) 474-8068	O	2,685	Small

420	Pinamungajan	Poblacion, Pinamungajan, Cebu 6039	Engr. Alfredo M. Peña	Ms. Cleopatra B. Tangarorang	(032) 468-9002 / 5506 / 9435	(032) 468-9002	O	3,018	Average
481	Santa Fe	Poblacion, Santa Fe, Cebu 6047	Engr. Wilfredo B. Salise				NO		
253	Sibulan	Nillas St., Poblacion, Sibulan, Negros Or. 6201	Engr. Teresita P. Mendez	Mr. Pablo J. Turtal, Jr.	(035) 226-6058 ; 419-8598	(035) 226-6058	O	4,087	Small
617	Tabuelan	Tabuelan, Cebu 6044		Mr. Pantaleon A. Evangelista	(038) 332-1078		NO	1,788	Small
80	Talibon	San Jose, Poblacion, Talibon, Bohol 6325	Mr. Proculo A. Cajes				O		
163	Tanjay	Legaspi St., Tanjay, Negros Oriental 6204	Engr. Richard V. Regalado	Ms. Ma. Isabel B. Banogon	(035) 415-8480 / 9838	(035) 415-8480	O	5,876	Medium
195	Toledo City	2nd Floor, Toledo Terminal Bldg., Baybay I, Toledo City, Cebu 6038	Rev. Fr. Raul J. Gallego	Engr. Avertino R. Zambo, Sr.	(032) 467-8533 / 8544	(032) 467-8533	O	6,828	Medium
REGION 8									
Comprises: Biliran, Leyte, Southern Leyte,									
Eastern, Northern & Western Samar - 40 / 26									
121	Abuyog	Brgy. Can-Uguib, Abuyog, Leyte 6510	Engr. Tomas A. Bautista (IGM)	Mr. Telesforo N. Nicart	(053) 334-4201	(053) 334-4201	O	1,700	Small
591	Allen	Allen, Northern Samar 6405	Engr. Bernardo Nalda				NO		
438	Babatngon	Babatngon, Leyte 6520	Mr. Danilo R. Jerusalem	Mr. Domingo C. Aguirre			NO		
215	Basey	KKK Bldg., Serafin Marabut St., Mercado Dist., Basey, Samar 6720	Ms. Elsie V. Merida	Mr. Alexis V. Yu	(055) 276-1021	(055) 276-1021	O	893	Small
39	Baybay	119 E. Jacinto cor. M.L. Quezon Sts., Baybay, Leyte 6521	Engr. Ernesto D. Fernandez	Mr. Cyril Luis L. Arradaza	(053) 335-2010; 563-9478	(053) 563-9478	O	6,188	Medium
116	Borongan	Sabang South, Borongan, Eastern Samar 6800	Engr. Raul Aviel Lopez	Atty. Socrates Alar, Jr.	(055) 560-9458	(055) 560-9548	O	2,200	Small
284	Calbayog City	J. D. Avelino St., Calbayog City, Samar 6710	Engr. Arnulfo W. Banzon	Mr. Ernesto L. Abasolo	(055) 209-1218 / 1843 / 2976	(055) 209-1183	O	8,607	Medium
491	Calbiga	Calbiga, Samar 6715	Engr. Orlando B. Figueroa	Ms. Petrona C. Figueroa			O	1,700	Small
236	Calubian	San Roque St., Poblacion, Calubian, Leyte 6534					O	250	Small
359	Catarman	2/F, Cardenas Bldg., cor. Roxas & Bonifacio Sts., Catarman, Northern Samar 6400	Engr. Guido A. Mollejon	Atty. Xerxes B. Camacho	(053) 254-1203 ; 251-8290	(053) 251-8290	O	1,695	Medium
107	Catbalogan	Allen Ave. Ext., Pier 2, Catbalogan, Samar 6700	Engr. Ralph S. Uy	Atty. Gerardo C. Teves	(055) 356-1044 ; 543-9259	(055) 251-2669	O	5,803	Big
459	Central Leyte	Dulag, Leyte 6505	Ms. Gloria M. Saño	Mr. Jesus A. Baranda			NO		
321	Dolores	San Joaquin St., Dolores, Eastern Samar 6817	Mr. Rodolfo P. Carpeso	Mr. Nerio T. Aberia			NO		
568	Gen. Macarthur	Gen. Macarthur, Eastern Samar 6805	Ms. Wilma C. Pabello	Mr. Felix H. Acosta			O	564	Small
201	Guiuan	Guiuan, Eastern Samar 6809	Mr. Rolando D. Abrenica	Engr. Armando T. Fernandez (IB)	(055) 271-2241	(055) 271-2241	O	1,071	Small
521	Isabel	Hotel Isabel Compound, Rizal St., Isabel, Leyte 6539	Engr. Camilo D. Echavia	Ret. Col. Raymundo H. Padua, Sr.	(053) 556-9227 ; 337-2163	(053) 556-9227	O	2,133	Small
157	Jaro	G/F, ABC Hall Bldg., Real St., Jaro, Leyte 6527	Engr. Antonio G. Sorima	Mr. Benedicto S. Horca, Jr.	(053) 541-5683	(053) 541-5683	O	760	Small

381	Laoang	Brgy. Guilaongi, Municipal Site, Laoang, Northern Samar 6411	Mr. Edgar C. Mendoza	Engr. Alfredo Tingkingco			O	300	Small
558	Lawa-an	Lawa-an, Eastern Samar 6813					NO		
19	Leyte Metro	A. Mabini St., Tacloban City, Leyte 6500	Mr. Nestor P. Villasin	Mr. Teodoro M. de Veyra, Jr.	(053) 325-8009 / 4312	(053) 325-8900	O	26,779	Large
220	Llorente	Llorente, Eastern Samar 6803					NO		
291	Maasin	S. Panal St., Abgao, Maasin City, Leyte 6600	Engr. Ronelo Antonio Palencia (IGM)	Ms. Virginia R. Gonzalez	(053) 381-2461 / 2171; 570-9708	(053) 381-3841	O	3,223	Medium
394	Matalom	Matalom, Leyte 6526	Mr. Rob O. Lao	Mr. Gumersindo S. Paz			NO		
522	Mercedes	Mercedes, Eastern Samar 6808	Ms. Salustiano A. Garado	Ms. Eulogia B. Macapugas			NO		
520	Merida	Mendoza St., Poblacion, Merida, Leyte 6540	Ms. Nonina C. Go	Mr. Susano G. Torejas			O	1,200	Small
246	Metro Carigara	Old Municipal Bldg., Reclamation Area, Carigara, Leyte 6529	Engr. Regidor V. Caballes	Dr. Bernardo V. de Guzman	(053) 331-2111 / 2431 / 2528	(053) 331-2431 / 1072	O	4,681	Medium
189	Metro Hilongos	Gomez Extension, Hilongos, Leyte 6524	Engr. Danilo U. Fulache	Ms. Petrina A. Fulache	(053) 336-2062 / 2820	(053) 336-2820	O	2,538	Average
275	Mondragon	Mondragon, Northern Samar 6417	Mr. Losanto P. Bebita	Mr. Mario M. Madera			NO		
118	Naval	Castin St., Naval, Biliran 6543	Mr. Mario C. Robenta	Mr. Mario Lydinno R. Opeña	(053) 500-9031	(053) 500-9643	O	4,365	Medium
276	Oras	Oras, Eastern Samar 6818	Mr. Virgilio L. Montances				NO		
542	San Isidro	San Isidro, Leyte 6535	Engr. Boby T. Manriquez	Engr. Jose Ebales			NO		
557	San Isidro	Municipal Bldg., San Isidro, Northern Samar 6409	Engr. Conrado C. Avila, Jr.	Engr. Thomas G. Tomacas			O	383	Small
583	San Jose	Brgy. East, Poblacion, San Jose, Northern Samar 6402	Ms. Rosalinda I. Somoray	Mr. Leonardo S. Banga			O	742	Small
416	San Julian	San Julian, Eastern Samar 6814	Mr. Kelvin Lesaca				NO		
188	Sogod	Kangleon Drive, Sogod, Southern Leyte 6606	Ms. Aniceta A. Engcoy	Dr. Benito D. Bascug	(053) 382-2052 / 3041	(053) 382-2052	O	1,727	Small
425	Sulat	Sulat, Eastern Samar 6815	Mr. Jaime A. So	Ms. Nenita C. Patilla	(055) 562-5572	(055) 562-5572	O	436	Small
584	Taft	Real St., Brgy. 3, Taft, Eastern Samar 6816	Mr. James Francis C. Chicano	Mr. Jose P. Cabacang			O	259	Small
556	Victoria	Poblacion, Victoria, Northern Samar 6406	Mr. Cedric G. Purog	Mr. Alde C. Gonzaga			O	266	Small
190	Villareal	Villareal, Samar 6717	Mr. Gerardo C. Sabio, Jr.	Atty. Jose Z. Tan			NO		
597	Zumarraga	Zumarraga, Samar 6725					NO		
REGION 9									
Comprises: Isabela City, Zamboanga del Norte, Zamboanga del Sur, Zamboanga Sibugay & Zamboanga City) 20 / 15									
184	Dapitan City	National Hi-way, Polo, Dapitan City, Zamboanga del Norte 7101	Mr. Manuel H. Gallemit	Mr. Jazmin Z. Hamoy	(065) 213-6406	(065) 213-6406	O	3,221	Medium
179	Dipolog City	Hi-way, Minaog, Dipolog City, Zamboanga del Norte 7100	Engr. Pabito S. Paluca	Col. Bienvenido B. Abejaron (Ret)	(065) 212-2574 / 6742 / 4485	(065) 212-4485; 212-6742	O	10,017	Big
492	Ipil-Titay	National Highway, Ipil, Zamboanga Sibugay 7001	Mr. Mario A. Landingin (IGM)	Mr. Daniel I. Landingin (IB)	(062) 333-2274 / 2995	(062) 333-2995	O	1,477	Small

330	Isabela City	Carlos P. Garcia St., Isabela City, Basilan 7300	Ms. Aleli C. Almodovar	Dr. Francisco G. Pioquinto	(062) 200-7418	(062) 200-7671	O	5,171	Medium
241	Kumalarang	Poblacion, Kumalarang, Zamboanga del Sur 7013	Ms. Loreta P. Maserin	Mr. Pedrito Tayone	(0910) 937-6200		O	465	Small
608	Labangan	Municipal Compound, Labangan, Zamboanga del Sur 7017	Mr. Herminio S. Pulmano	Ms. Delia G. Duldulao			O	920	Small
205	Labason	Labason, Zamboanga del Norte 7117					NO		
511	Lakewood	Lakewood, Zamboanga del Sur 7014					NO		
587	Lapuyan	Lapuyan, Zamboanga del Sur 7037					NO		
187	Liloy	Poblacion, Liloy, Zamboanga del Norte 7115	Engr. Rey M. Ronquillo	Mr. Luciano Babad	(0921) 352-1937		O	650	Small
396	Mahayag	Mahayag, Zamboanga del Sur 7026					NO		
51	Pagadian City	F. Datoc St., Gatas Dist., Pagadian City, Zamboanga del Sur 7016	Engr. Edilberto E. Yorong	Ms. Priscilla M. Fernandez	(062) 214-1747 / 4789	(062) 214-2179	O	1,376	Big
532	Polanco	Pob. North, Polanco, Zamboanga del Norte 7106	Engr. Roseller P. Gerzon	Mr. Willy R. Genotiva	(065) 311-1519	(065) 311-1519	O	1,500	Average
506	Pres. M.A. Roxas	Don E. Azcuna St., Pres. M.A. Roxas, Zam. del Norte 7102	Mr. Rolando R. Daniel	Ms. Macrina O. Realiza	(065) 311-1667	(065) 311-1667	O	557	Small
514	Rizal	East Poblacion, Rizal, Zamboanga del Norte 7104	Mr. Salvador Andrew S. Salboro	Mr. Porfenio B. Tongco			O	555	Small
204	Salug	Magsaysay St., Pob., Salug, Zamboanga del Norte 7114					NO		
479	Sindangan	Provincial Road, Brgy. R. Magsaysay, Sindangan, Zamboanga del Norte 7112	Engr. Raul T. Escabarte	Mr. Isidoro S. Yu, Jr.	(065) 224-2324	(065) 224-2698	O	1,782	Small
98	Siocon	G. Alano St., Pob., Siocon, Zamboanga del Norte 7120	Engr. Al M. Java	Ms. Terry L. Zuniga	(065) 311-4781	(065) 311-4781	O	865	Small
465	Tukuran	F. Ocampo Sr. St., Sto. Niño, Tukuran, Zamboanga del Sur 7019	Engr. Emmanuel G. Cabatic	Mr. Edgardo P. Quilap	(0920) 860-7237		O	770	Small
6	Zamboanga City	Pillar St., Zamboanga City 7000	Mr. Leonardo Rey D. Vasquez	Mr. Vicente A. Jaldon	(062) 991-1556 / 1857	(062) 991-2799	O	45,328	Very Large
AUTONOMOUS REGION OF MUSLIM MINDANAO									
Comprises: Basilan, Lanao del Sur, Maguindanao, Sulu, & Tawi-Tawi) - 12 / 7									
457	Balabagan	Balabagan, Lanao del Sur 9302					NO		
301	Bongao	Tubig-Boh, Bongao, Tawi-Tawi 7500	Engr. Rosendo R. Reyes	Hdja. Taiba I. Dalagan	(068) 268-1404	(068) 268-1000	O	2,175	Average
254	Jolo Mainland	Camp Asturias, Jolo, Sulu 7400	Mr. Ferdinand Marquez (IGM)	Mr. Daniel I. Landingin (IB)	(085) 341-6891 loc. 2107		O	4,680	Big
269	Lamitan City	Gen. Aguinaldo St., Lamitan City, Basilan 7302	Mr. Aurelio P. Quir, Jr.	Mr. Efen J. New			O	2,948	Small
145	Malabang	Malabang, Lanao del Sur 9300					NO		
512	Maluso	Townsite, Maluso, Basilan 7303	Engr. Sallie D. Francisco, Al haj	Hadji Abdula J. Abubakar	(0919) 308-5841; (0927) 689-2112		O	1,300	Small
525	Mapun	Mapun, Tawi-Tawi 7508					NO		
3	Marawi City	Pumping St., Bubonga-Marawi, Islamic City of Marawi 9700	Mohd. Ali A. Malambut	Dr. Moklin S. Naina	(0920) 759-7177		O	3,500	Average

433	Masiu	Masiu, Lanao del Sur 9706	Engr. Den Saudi T. Kong	Ret. Col. Juljani Abah					NO		
387	Siasi	East Kuntad, Siasi, Sulu 7412							O	400	Small
415	Simunul	Tampakan, Simunul, Tawi-Tawi 7505							NO		
519	Wao	Wao, Lanao del Sur 9716	Mr. Salvador I. Redulla (Acting)	Mr. Tomas Carumba, Jr.					O	1,685	Small
REGION 10											
Comprises: Bukidnon, Camiguin, Lanao del Norte, Misamis Occidental & Misamis Oriental - 19 / 19											
543	Bacolod	Poblacion, Bacolod, Lanao del Norte 9205	Engr. Noel L. Resabal	Dr. Bob C. Andot		(063) 227-2041	(063) 227-2041		O	1,575	Small
501	Balingasag	cor: Madroño St. & Nat'l Hi-way, Brgy. 4, Balingasag, Misamis Oriental 9005	Mr. Renee Sann R. Ubalde	Ms. Andrea H. Borromeo		(08822) 720902; (088) 333-2025	(088) 333-2025		O	1,946	Small
1	Cagayan de Oro City	Corrales Avenue, Cagayan de Oro City 9000	Engr. Gaspar D. Gonzales, Jr.	Dr. Raymundo J. Java		(08822) 72-6248 / 8359	(08822) 72-2705 / 9657		O	68,421	Large
212	Claveria	Lanta St., Claveria, Misamis Oriental 9004	Ms. Logie P. Nagasan	Ms. Alicia M. Montecillo		(088) 358-1061	(088) 358-1061		O	570	Small
248	Don Carlos	Don Carlos Sur, Bukidnon 8712	Mr. Bienvenido Nilo A. Garcia	Dr. Victorino T. Peralta		(08822) 62327	(08822) 62639		O	1,297	Small
25	Gingoog City	J.Z. Mercado Ave., Gingoog City 9014	Ms. Jo Ann U. Lim	Ret. Judge PR. de los Reyes		(088) 861-1190 ; (08842) 7448	(088) 861-1190		O	3,837	Big
418	Kapatagan	Hi-way cor: Buenacosa St., Kapatagan, Lanao del Norte 9214	Ms. Buenalita B. Rañises			(063) 382-8071	(063) 382-8192		O	2,506	Average
540	Kauswagan	Municipal Bldg., Kauswagan, Lanao del Norte 9202	Mr. Cedric D. Laguerta	Mr. Miguel R. Daita					O	1,191	Small
400	Kibawe	Rizal-Osmeña Sts., West Kibawe, Kibawe, Bukidnon 8720	Mr. Israel B. Beleno	Dr. Concepcion S. Villalon		(088) 357-1589	(088) 357-1589		O	1,168	Small
539	Kolambugan	Cabili St., Purok 7, Pob. 2, Kolambugan, Lanao del Norte 9207	Engr. Lionel Alfredo A. Infante	Dr. Vicente P. Mejorada		(063) 355-4595	(063) 355-4595		O	1,400	Small
517	Linamon	Purok 1, Poblacion, Linamon, Lanao del Norte 9201	Mr. Celestino C. Sipalay, Jr.	Mr. Albertino C. Macas		(063) 227-0107	(063) 227-0107		O	1,605	Small
33	Malaybalay City	Sayre Highway, Sumpung, Malaybalay City, Bukidnon 8700	Mr. Juanito C. Aroa	Atty. Abundio L. Okit		(088) 221-2640 ; 813-3670	(088) 813-3670		O	9,462	Big
202	Mambajao	UMYCCO, Rizal St., Poblacion, Mambajao, Camiguin 9100	Engr. Pacita S. Romualdo	Mr. Redentor E. Valcorza		(088) 387-0013	(088) 387-0013		O	2,750	Small
401	Manolo Fortich	A. Ditona St., Tankulan, Manolo Fortich, Bukidnon 8703	Engr. Rogelio K. Pangan	Mr. Ignacio R. Lanticse		(088) 230-2271	(088) 230-2512		O	4,894	Small
496	Maramag	T. Coruña St., South Pob., Maramag, Bukidnon 8714	Ms. Rosemarie D. Agustin	Mr. Conrado G. Micaybas, Jr.		(088) 356-1245 / 1246	(088) 356-1245		O	4,196	Average
10	Misamis Occidental	Maningcol, Ozamis City, Mis. Occidental 7200	Engr. Ferdinand D. Revelo	Mr. Ernie F. Bandala		(088) 521-0339 / 0849 / 4430	(088) 521-1743		O	13,865	Big
158	Tangub City	2nd South St., Centro, Tangub City, Misamis Occ. 7214	Engr. Joel L. Astillero	Mr. Charles D. Tan		(088) 354-1503 ; 395-3343	(088) 354-1503		O	2,233	Small
228	Tubod-Baroy	Provincial Trade Center, Sagadan, Tubod, Lanao del Norte 9209	Mr. Elmer L. Olavides	Atty. Dorothea S. Basalo		(063) 341-5313	(063) 341-5313		O	2,230	Average
141	Valencia City	Hagcol, Valencia City, Bukidnon 8709	Mr. Ruel P. Padrequil	Engr. Edwin C. Villahermosa		(088) 844-2422; 828-2059 / 2857	(088) 828-2058 / 2067		O	11,062	Big

REGION 11										
Comprises: Compostela Valley, Davao City, Davao del Norte, Davao del Sur										
Davao Oriental) - 18 / 16										
579	B. E. Dujali	B. E. Dujali, Davao del Norte 8105								
154	Baganga	Concepcion St., Baganga, Davao Oriental 8204	Mr. Abello L. Donggapon	Ms. Geraldine R. Matabalan						13 Small
57	Bansalan	1535 R. De los Cientos cor. Camia Sts., Bansalan, Davao del Sur 8005	Mr. Paul J. Arches	Mr. Vicente Comia	(082) 553-9228 ; (0919) 825-4783	(082) 553-9229				4,008 Average
319	Carmen	Purok 7, Gumamela St., Pop., Carmen, Davao del Norte 8101	Mr. Ernesto S. Facula, Sr.	Mr. Santiago S. Pesanos	(0919) 466-7556					445 Small
5	Davao City	Km. 5, J. P. Laurel Ave., Davao City 8000	Engr. Rodora N. Gamboa	Mr. Eduardo A. Bangayan	(082) 221-9400 to 12	(082) 226-4885; 224-5391				158,788 Very Large
147	Digos	Rizal Avenue, Digos City, Davao del Sur 8002	Atty. Isauros B. Gravador	Atty. Ollita P. Atillo-Anyog	(082) 553-2111 ; 351-0071	(082) 553-2872				10,607 Big
548	Hagonoy	Guihing, Hagonoy, Davao del Sur 8006	Mr. Ramon H. Vencio	Dr. Carlos C. Clemente						189 Small
564	Island Garden City of Samal	SIMC Bldg., Cor: Mabini-Rizal Sts., Samal, Davao 8119	Ms. Ines D. Solamo	Mr. Samson B. Paciones	(084) 301-4013	(084) 301-4013				2,606 Small
507	Kiblawan	Poblacion, Kiblawan, Davao del Sur 8008	Mr. Honesto L. Cañedo	Mr. Edmundo B. Tampos						850 Small
428	Lupon	Aguinaldo cor. K. Baratua Sts., Lupon, Davao Oriental 8207	Mr. Ricardo C. Vicente	Mr. Wilbert C. Ngo	(087) 808-0381	(087) 808-0381				1,156 Small
490	Malalag	Malalag, Davao del Sur 8010								
35	Mati	Ong Subdivision, Mati City, Davao Oriental 8200	Engr. Jesus Cesar P. Albarico	Atty. Arnulfo Agleron	(082) 811-0392	(082) 811-2457				3,100 Small
423	Monkayo	Monkayo, Compostela Valley 8111								
146	Nabunturan	J. P. Laurel Blvd., Pop., Nabunturan, Compostela Valley 8106	Ms. Florencia C. Lagura	Mr. Edgardo D. Savellano	(084) 376-1010	(084) 376-1010				2,387 Average
552	New Corella	Poblacion, New Corella, Davao del Norte 8104	Mr. Paulino M. Dayoc	Mr. Ely O. Baer						915 Small
200	Panabo	J.P. Laurel St., Panabo City, Davao 8105	Mr. Reynaldo B. Ortiz	Mr. Domingo C. Caslib	(084) 628-5356; 822-3167	(084) 822-3167				2,719 Average
161	San Isidro	Poblacion, San Isidro, Davao Or: 8209	Engr. Edgardo F. Pedrosa	Mr. Pio L. Te, Jr.	(0910) 832-7560					714 Small
175	Tagum	Mirafuentes Dist., National Hi-way, Tagum City, Davao 8100	Mr. Henrietto Q. Castrence	Engr. Eugenio S. Guhao, Jr.	(084) 217-3159 / 1620; 400-1137	(084) 400-1137				16,183 Big
REGION 12										
Comprises: North Cotabato, Sarangani, South Cotabato & Sultan Kudarat - 24 / 24										
565	Antipas	Poblacion, Antipas, North Cotabato 9414	Mr. Ronaldo R. Abasolo	Mr. Benjamin H. Lopez	(0919) 305-0130 / (0910) 756-9599					1,123 Small
230	Banga	Quezon Ave., Poblacion, Banga, South Cotabato 9511	Engr. Eugenio G. Ortega	Mr. Alfredo C. Ferrer	(083) 239-1036	(083) 239-1036				540 Small
370	Gen. Santos City	E. Fernandez St., Lagao, Gen. Santos City, So. Cot. 9500	Engr. Arn B. Gellangarin	Engr. Jose P. Valenzuela	(083) 553-4960; 554-7231	(083) 553-4960				22,085 Medium
439	Glan	National Hi-way, Calabanit, Glan, Sarangani 9517	Mr. Rene S. Hizoler	Ms. Rosita P. Malamao	(083) 225-9036	(083) 225-9036				1,200 Small

194	Kabacan	Rizal Avenue, Kabacan, North Cotabato 9407	Mr. Ferdie Mar S. Balungay	Dr. Arturo N. Anulao	(064) 248-2074 / 391-1172	(064) 248-2767	O	3,999	Medium
376	Kalamansig	341 Poblacion, Kalamansig, Sultan Kudarat 9808	Engr. Aristeo J. Lao (IGM)	Engr. Fred Fabellon (IB)			O	405	Small
156	Koronadal	79 G. H. del Pilar St., Koronadal City, So. Cotabato 9506	Engr. Fred Fabellon (IGM)	Mr. Daniel I. Landingin (IB)	(083) 381-0127 ; 520-0764	(083) 381-0127	O	5,172	Average
499	Lebak	Galido Bldg., Pob. I, Lebak, Sultan Kudarat 9807	Mr. Citland Rolando C. Tongcua	Rev. Fr. Elmer I. dela Cruz	(064) 205-3554	(064) 205-3003	O	420	Small
209	M'lang	Rizal St., M'lang, North Cotabato 9402	Engr. Robert S. Cadriena	Ms. Lilia L. Cuerpo	(064) 268-4006 ; 452-0117	(064) 268-4006	O	1,133	Small
444	Maasim	Municipal Compound, Poblacion, Maasim, Sarangani 9502	Mr. Dalmacio O. Pelones	Mr. Ciriaco Velita			O	625	Small
216	Malapatan	Malapatan, Sarangani 9516					O	100	Small
592	Malungon	Poblacion, Malungon, Sarangani 9503	Mr. Henry Lito Pactes	Ms. Violeta P. Anfone	(0915) 580-8300		O	547	Small
30	Metro Cotabato	Gov. Gutierrez Avenue, Cotabato City, Cotabato 9600	Atty. Delfin C. Hilario	Engr. Yu Beng L. Chua	(064) 421-3566 / 3569 / 1070	(064) 421-3596 / 3009	O	22,700	Big
41	Metro Kidapawan	Lanao, Kidapawan, North Cotabato 9400	Ms. Stella G. Anima	Ms. Ma. Corazon G. Malaluan	(064) 288-1865 / 1533 / 5257	(064) 288-5257 ; 378-4376	O	19,012	Large
174	Metro Midsayap	007 Pob. 8, Midsayap, North Cotabato 9416	Ms. Carol S. Tolentino	Atty. Rodolfo D. Cambronero	(064) 229-8215 / 8973	(064) 229-8973	O	3,658	Average
213	Norala	Alunan Ave., Poblacion, Norala, South Cotabato 9508	Engr. Joven P. Aguilar (IGM)	Ms. Eriberta P. Pulido	(083) 234-1018	(083) 234-1018	O	622	Small
477	Pigkawayan	Roquero St., Pigkawayan, North Cotabato 9412	Engr. Aristeo J. Lao	Mr. Fred F. Fabellon (IB)	(064) 229-3226	(064) 229-3400	O	497	Small
495	Pikit	National Hi-way, Pob., Pikit, North Cotabato 9409	Engr. Max Vitoria Boado	Atty. Emmanuel G. Ferenal	(064) 457-0085	(064) 457-0085	O	1,107	Small
153	Polomolok	Dulay Subdv., National Hi-way, Polomolok, So. Cot. 9504	Mr. Andresito J. Gilla	Engr. Panfilo R. Jayme	(083) 225-2020; 500-9022	(083) 500-8008	O	8,901	Average
582	Pres. Roxas	Pres. Roxas, North Cotabato 9405	Engr. Emilio Valente (Acting)	Mr. Robert G. Herbilla, Sr.	(0919) 323-8707		O	418	Small
247	Sultan Kudarat	Cor. Bonifacio & Quirino Sts., Tacurong City, Sultan Kudarat 9800	Engr. Jose D. Tabuga, Jr.	Engr. Nonito P. Bernardo	(064) 200-3359 / 3353 / 5072	(064) 200-3359	O	8,790	Medium
500	Surallah	Crossing Curva, Dajay, Surallah, South Cotabato 9512	Engr. Igmedio E. Subillaga	Atty. German A. Operiano	(083) 238-3783	(083) 238-3264	O	1,237	Small
590	Tulunán	J.P. Rizal St., Poblacion, Tulunan, North Cotabato 9403	Ms. Cherry Ann B. Faustino	Ms. Liberty Cadungan	(0921) 609-1880		O	165	Small
280	Tupi	Surriga Bldg., Tupi Nat'l Hiway, Tupi, So. Cotabato 9505	Mr. Jason C. Surriga (OIC-GM)	Mr. Jaime P. Jangcan	(083) 822-0002	(083) 822-0002	O	624	Small

CARAGA ADMINISTRATIVE REGION										
Comprises: Agusan del Norte, Agusan del Sur, CLASSI-										
Surigao del Norte & Surigao del Sur - 32 / 20										
550	Alegria	Alegria, Surigao del Norte 8425	Engr. Jaime T. Galgo, Jr.	Mr. Valerio Ranay						
515	Bacuag	Naldoza St., Bacuag, Surigao del Norte 8408	Engr. Jimuel O. Yu	Ms. Victoria A. Adel	(086) 826-5355 (PCO)	(086) 826-5355 (PCO)			NO	672
193	Barobo	Barobo, Surigao del Sur 8309	Engr. Consorcio P. Barriga						NO	
243	Bayugan	Lanzones St., Pop., Bayugan, Agusan del Sur 8502	Ms. Felifa M. Asis	Mr. Darlito A. Sulit, Sr.	(085) 830-0452 / 2244 ; 231-3140	(085) 830-0452 / 2244 ; 231-3140			O	2,777
23	Bislig City	Cor. John Bosco & Hi-way, Mangagoy, Bislig City, Surigao del Sur 8311	Engr. Menillo C. Siega	Mr. Roberto A. Dormendo	(086) 628-2092; 853-2032	(086) 628-2092; 853-2032			O	8,376
406	Buenavista	National Hi-way, Brgy. 2, Buenavista, Agusan del Norte 8601	Engr. Conchito E. Quimzon	Dr. Raymundo A. Aviso, Jr.	(085) 343-4037	(085) 343-4037			O	1,810
549	Bunawan	Purok 2, San Teodoro, Bunawan, Agusan del Sur 8506	Engr. Armando T. Cabanilla	Dr. Emeterio I. Castillo, Jr.					O	492
7	Butuan City	Gov. J.A. Rosales Ave., Butuan City, Agusan del Norte 8600	Engr. Anselmo L. Sang Tian	Mr. Ferdinand C. Plencenaves	(085) 342-3145; 341-6373 to 74	(085) 815-1268 ; 341-5008			O	30,727
240	Cabadbaran	Garame St., Cabadbaran, Agusan del Norte 8605	Mr. Benedicto S. Flores	Ms. Natividad M. Fuentes	(085) 344-6001				NO	
502	Cagwait	Molave St., Aras-asan, Cagwait, Surigao del Sur 8304							O	600
441	Cantilan	Urbizondo St., Magosilom, Cantilan, Surigao del Sur 8317	Mr. Segundino B. Buniel	Mr. Jesus G. Ortega	(086) 212-5034	(086) 212-5034			O	1,389
547	Carrascal	Carrascal, Surigao del Sur 8318	Mr. Celso P. Azarcon	Mr. Arcadio Trugillo					NO	
464	Claver	Claver, Surigao del Norte 8410	Mr. Antonio Pacquiao						NO	
588	Del Carmen	Del Carmen, Surigao del Norte 8418	Mr. Anderson U. Licuan	Engr. Jerwin P. Yee	(086) 232-5595 (PCO)				O	577
594	Gigaquit	Gigaquit, Surigao del Norte 8409							NO	
594	Hinatuan	Paterno St., Sto. Niño, Hinatuan, Surigao del Sur 8310	Engr. Jose Hilario V. Pandili, Jr.	Mr. Charlito C. Sabado	(0920) 420-2304				O	1,573
104	Lianga	Mabini St., Lianga, Surigao del Sur 8307	Mr. Wilfredo G. Sanchez	Mr. Angelito M. Dy	(086) 616-0020				O	1,200
404	Lingig	Poblacion, Lingig, Surigao del Sur 8312	Mr. Elyzer B. Lim	Mr. Antonio P. Verano					NO	
504	Madrid	National Hi-way, Madrid, Surigao del Sur 8316	Mr. Ernesto D. Rios	Ms. Eutropia P. Azarcon	(086) 213-4067				O	567
435	Magallanes	G/F Brgy. Hall, Pop., Magallanes, Agusan del Norte 8604	Mr. Renato V. Durana	Mr. Manuel R. Albasin					NO	
498	Mainit	Mainit, Surigao del Norte 8407							NO	
56	Metro Siargao	Dapa, Surigao del Norte 8417	Mr. Antonio J. Adapon	Mr. Pio L. Tiu					O	350
211	Nasipit	Mambo Road, B-5, Brgy. Triangular, Nasipit, Agusan del Norte 8602	Ms. Leonarda R. Fuytes	Mr. Roberto O. Pusa	(085) 283-3061/343-3302	(085) 343-3302			O	3,234
355	Placer	A. Patiño cor. E. Custodio, Placer, Surigao del Norte 8405	Engr. Andro Michael C. Bugas	Mr. Ramon F. Altamero, Sr.	(086) 623-0009	(086) 826-4415			O	2,100
66	Prosperidad	Poblacion, Prosperidad, Agusan del Sur 8500	Mr. Rudy E. Metante	Mr. Raul S. Tello	(085) 241-3199	(085) 241-3199			O	1,500

