

Performance Based Contracts in Non-Revenue Water Reduction Programs

March 2017

Session 7: Exercise on PBC Design and Risk Allocation

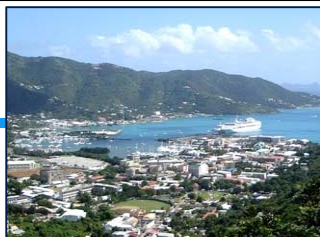


www.wsp.org | www.worldbank.org/water | www.blogs.worldbank.org/water | [@WorldBankWater](https://twitter.com/WorldBankWater)

Case Study

- NRW Design
- PBC Design and Risk Allocation





Example Ajuga

Key Descriptions

- Tropical island with tourist economy
- High growth expected, about 3%
- Relatively high pressure
- Continuous supply
- 100% customer metering
- High water consumption
- Adequate current capacity
- NRW @ 23,900 m³/day
- NRW @ 478 L/conn/day
- Real loss @ 3x Apparent loss
- Use of costly desalinated water
- High tariff
- Revenues just cover O&M costs

Description	Tropical Island
Data Availability	Good
No. of connections	50,000
Length of Mains, km	500
Average Operating Pressure, m	40
Water Production Capacity, 1000 m ³ /day	86.0
Water Production Capacity Utilization, %	82%
Continuity of Supply	24x7
Potential Improvement in Continuity	NA
System Input Volume, 1000 m ³ /day	70.3
Estimated Billed Consumption, 1000 m ³ /day	46.4
Estimated Total NRW, 1000 m ³ /day	23.9
Estimated Apparent Loss + UAC, 1000 m ³ /day	5.9
Estimated Real Loss, 1000 m ³ /day	18.0
Extent of Customer Metering	100%
Average Full Use, m ³ /connection/month	30
Average Full Use, L/Capita/Day @6 people/conn.	164
Expected Growth in Demand, % / year	3%
Variable Cost of Water, \$/m ³ produced	\$0.95
Cost of Water from next Supply, \$/m ³ produced	\$1.50
Average Tariff for metered connections, \$/m ³ sold	\$3.00
Fee for Unmetered Connections, \$/month	NA
Operating Ratio = Oper Revenues / Oper Costs	1.04

2



Case

Key Descriptions

- Economy
- Demand Growth
- Pressure
- Continuous supply
- Customer metering
- Water consumption
- Current production capacity
- NRW @ x m³/day
- NRW @ x L/conn/day
- Real loss @ xtimes Apparent loss
- Use of costly desalinated water
- Tariff
- Revenues versus O&M costs

Description	
Data Availability	
No. of connections	
Length of Mains, km	
Average Operating Pressure, m	
Water Production Capacity, 1000 m ³ /day	
Water Production Capacity Utilization, %	
Continuity of Supply	
Potential Improvement in Continuity	
System Input Volum, 1000 m ³ /day	
Estimated Billed Consumption, 1000 m ³ /day	
Estimated Total NRW, 1000 m ³ /day	
Estimate Apparent Loss + UAD, 1000 m ³ /day	
Estimate Real Loss, 1000 m ³ /day	
Extent of Customer Metering	
Average Full Use, m ³ /conneciotion/month	
Average Full Use, L/Capita/Day @ 6 people/conn.	
Expected Growth in Demand, %/year	
Variable Cost of Water, \$/m ³ produced	
Cost of Water from next Supply, \$/m ³ produced	
Average Tariff for metered connections, \$/m ³ sold	
Fee for Unmetered Connections, \$/month	
Operating Ratio = Oper Revenues/Oper Costs	

3



Judgment Call #1: Does the situation call for a PBC? If yes, what are the company's most important dilemmas and how would you propose the company resolve them?

List Three Most Important Dilemmas

- #1
- #2
- #3

What Solution/Approach would you Propose

4



Judgment Call #2: What is the objective of the PBC? What project components would include and how would you structure the payment mechanism? Which Components would you put as payment at risk?

Project Objective: Please state

Project Components:

- One
- Two
- Three
- Four

Performance Based Payment for	Fixed Fee Payment for	Progress or Outputs Payment for

Judgment Call #3: Which key risks would you consider in this PBC and how would you allocate it between the Contractor and Utility?

Key Risks

- Risk 1

Born by Contractor	Born by Public Sector	Shared
Risk # -	Risk #-	Risk #-

Judgment Call #4: Which PBC contract models would be relevant and why?

Probably Applicable	Probably Not Applicable

Case Study

- Market Sounding
- Bidding



What Issues Will You Want to Test in a Market Sounding?



What Bidding Considerations Will You Have?

Eligibility Criteria and Bidding Parameters	Bidding Process	Other Conditions/Considerations
<ul style="list-style-type: none">• Consideration #1	<ul style="list-style-type: none">• Stages of Bidding and Conduct	<ul style="list-style-type: none">• Consideration