

# Performance Based Contracts in Non-Revenue Water Reduction Programs

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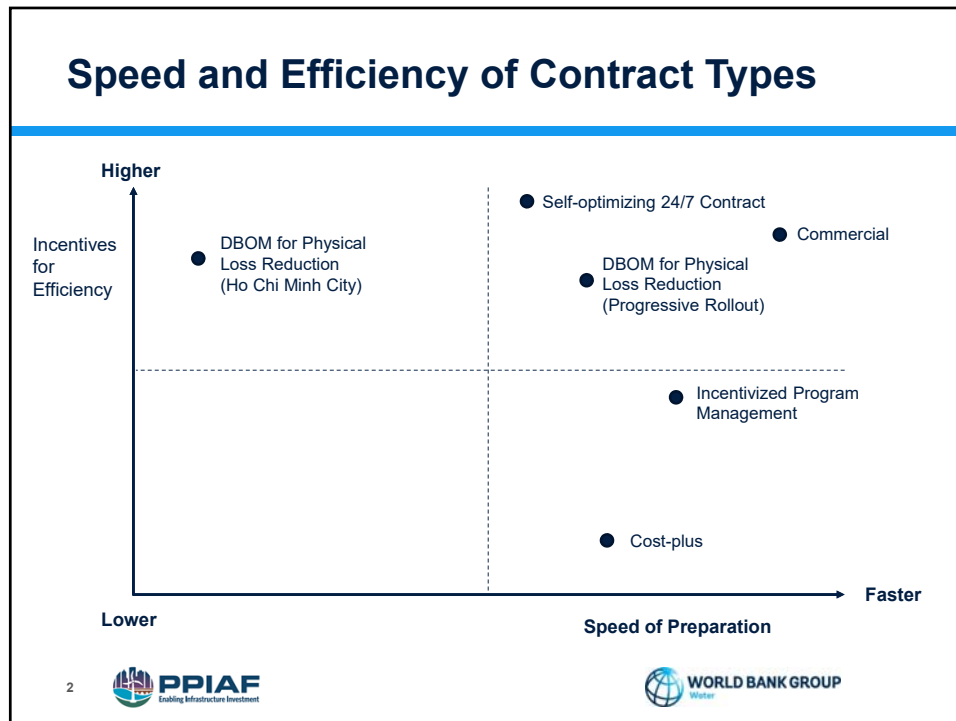
## Session 6: Selecting Which Type of NRW-PBC to Use



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### 6 Types of NRW-PBCs

	Objective	Payment	Pre-requisites & Baseline
<b>DBOM for Physical Loss Reduction (HCMC)</b>	↓ Physical Losses	<ul style="list-style-type: none"> <li>• Creation of DMAs (BOQ)</li> <li>• Water saved and \$/m<sup>3</sup></li> </ul>	Consultant establishes: <ul style="list-style-type: none"> <li>• Cost and quantity estimates</li> <li>• Baseline</li> <li>• Performance measurement system</li> </ul>
<b>DBOM for Physical Loss Reduction (Progressive Rollout)</b>	↓ Physical Losses	<ul style="list-style-type: none"> <li>• Creation of DMAs (BoQ)</li> <li>• Water saved \$/m<sup>3</sup></li> </ul>	Consultant establishes: <ul style="list-style-type: none"> <li>• Rough DMA plan</li> <li>• Indicative costs of leak reduction</li> </ul> Baseline and performance measurement established for DMA as they are built.
<b>Self-optimizing 24/7</b>	↑ 24/7 supply	Benefits – Costs – Sharing Factor	<ul style="list-style-type: none"> <li>• Client establishes value of customer on 24/7</li> <li>• Baseline and measurement system established by contractor</li> </ul>
<b>Incentivized Program Management</b>	Options: ↓ Physical Losses ↓ Commercial Losses ↑ Collections ↑ 24/7	<ul style="list-style-type: none"> <li>• Program Manager—Cost-based fee with Incentive payment for targets achieved</li> <li>• Contractors—Works as bid</li> </ul>	<ul style="list-style-type: none"> <li>• Very low – Program Manager plans work to create baseline and measures performance first</li> </ul>
<b>Cost Plus</b>	Options: ↓ Physical Losses ↓ Commercial Losses ↑ Collections ↑ 24/7	<ul style="list-style-type: none"> <li>• Actual costs (open-book) + profit margin/fee</li> </ul>	<ul style="list-style-type: none"> <li>• Low - Contractor creates system to measure baseline and performance as first task.</li> </ul>
<b>Commercial Loss Reduction Contracts</b>	↓ Commercial losses ↑ Collections	Varies according to contract type (See Table B.4 in Manual Appendix B)	



### Conditions in which to use each type

Goal	DBOM Physical Losses		Self-Optimizing 24/7	Incentivised Program Manager	Cost-plus	Commercial Contracts (Table B.4)
	HCMC	Progressive				
<b>Goal</b>						
Reduce physical losses	✓	✓	Possibly as ancillary goal	✓	✓	✗
Bring customers onto 24/7	✗	✗	✓	✓	✓	✗
Reduce commercial losses	Could add	Could add	✓ (Formula)	✓	✓	✓
Increase collections	✗	✗	✓ (Formula)	✓	✓	✓
<b>Information utility has</b>						
Low	✗	?	✗	✓	✓	Depends
Medium	?	✓	✓	✓	✓	Depends
High	✓	✓	✓	✓	✓	Depends
<b>Need for speed</b>						
High	✗	✗	✗	✓	✓	✓
Medium	✗	✓	✓	✓	✓	✓

## DBOM for Physical Loss Reduction – Ho Chi Minh City

### Contractor Responsibilities

The contractor is responsible for managing and implementing the NRW-reduction program under its own account, including:

- Construction of DMAs
- Any other specified work

The contractor may sub-contract items, but remains responsible for the work.

The contractor is not responsible for the risk associated with everyday operations of the utility.

### Payment Arrangement

- DMA Construction on BOQ basis
- Active Leak control on \$/m<sup>3</sup> saved

### Selection

Selection based on meeting qualification criteria and:

- Lowest cost to achieve target volumetric reduction  
(Option: Highest volumetric reduction for fixed budget.)

### Advantages

- Billing and bid evaluation are relatively straight forward since everything is reflected in a cost per unit volume.
- The utility is guaranteed a minimum amount of NRW reduction (otherwise it recoups funds)

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## Ho Chi Minh Contract Terms and Result

### Terms:

- 4 year reduction period + 1 year maintenance

### Goal:

- Reduce Physical Losses in 1 of 6 network zones in HCMC

### Payment:

- Lump sum price per DMA established as per a Priced Activity Schedule
- Contractor paid for the number of DMAs completed

### Leakage Reduction Payment:

- Fixed fee for leakage reduction activities
- Performance fee per m<sup>3</sup> of leakage reduction with a minimum threshold of 37,500 m<sup>3</sup>/day specified for quantum of leakage reduction
- Performance fee paid according to achieved loss reduction (m<sup>3</sup>/day), 20% retention until final invoice.

### Contingency Payment:

- Payment linked to BoQ (supply and installation) for unforeseen works and works to connect new customers

### Results:

- NRW ↓ 121,621m<sup>3</sup>/day over 6 years
- Fell from 52% (2005) to 33% (current)

### Comparator:

- Public sector approach in similar zone saved less than half the volume over 8 years.

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## DBOM for Physical Loss Reduction – Progressive Roll-out

### Contractor Responsibilities

Contractor constructs DMAs across the zone and installs instrumentation and controls, adapting an indicative map provided.

As each DMA is completed:

- Establishes the NRW baseline for that DMA
- Reduces NRW through physical loss reduction and possibly commercial reduction.

### Payment Arrangement

Payment can be capped at a maximum amount

Water utility pays contractor on a BOQ basis

- As each DMA is completed
- When installation of instrumentation and controls is completed

Water utility pays contractor for:

- NRW reduced \$/m<sup>3</sup> day

### Contractor Selection

1. Qualification Criteria: Pass/fail
2. Bid factor: lowest price for target reduction quantity

### Advantages

- Most of the advantages of HCMC Contract but with greatly reduced preparation and more adaptability

### Where It Works

- Physical-loss reduction is a priority
- DMAs are clearly the right solution
- There is enough water to reach 24/7 and speed is desired

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## Self-Optimizing 24/7 Contract

### Contractor Responsibilities

Contractor installs performance measurement system and carries out baseline.

Contractor designs and carries out the leak detection and repair needed to bring as many people as possible onto 24/7 service within a fixed budget

### Payment Arrangement

BOQ basis for specified works

Phase 2

- Incentive payment equals net value (benefits-costs of program)
- "Sharing factor" transfers benefits to utility.

### Selection

1. Qualification Criteria: Pass/fail
2. Bid factor: Specified number of connections put on 24/7 before results-based payment starts

### Bid documents specify:

- The \$ payment per customer brought onto 24/7
- Penalties for excess bulk water use or reductions in service to other customers
- Other benefit payments or penalties (if any).

### Advantages

- Formula encourages optimization, so upfront planning and design by consultants is not needed.

### Best for

- Water utilities that have intermittent supply and want to quickly increase the number of customers with 24/7 access with a constant input volume
- Where there is enough water to reach 24/7 through leak reduction and the utility is willing to leave design choices to the contractor
- Capable clients

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## Incentivized Program Management

### Contractor Responsibilities

Contractor designs, procures the implementation of, and supervises on behalf of the utility the required NRW-reduction activity

Implementation done by competitively selected works contractors. (Some may also be on incentivized contracts.)

### Payment Arrangement

- Fixed component (covers management and design services)
- A negotiated percentage of capital works costs
- Incentive payment based on the level of improvement achieved for fixed CAPEX budget.

### Selection

The utility selects a program manager (PM) that is responsible for:

- Design, implementation, and supervision of NRW-reduction activities

Selection is based on:

A financial evaluation based on the fixed-fee bid Quality-of-work ranking

### Advantages

- Flexibility since program manager can adjust to new information
- One of the fastest PBCs to prepare

### Where It Works

- Desire to move fast
- Willingness to delegate design, procurement, and supervision of a NRW-reduction project to a program manager
- Inadequate capacity to manage NRW Program

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## Cost Plus

### Contractor Responsibilities

- Establishes a system for measuring NRW
- Measures baseline
- Maximizes a NRW reduction within a fixed budget

### Payment Arrangement

- Water utility gives contractor a fixed budget
- The contractor recovers costs plus a margin. The bidding documents specify the margin
- Costs are disclosed on an open-book basis

#### Option:

- Performance payments may be made for progress on indicators (after baseline is certified)

### Contractor Selection

Quality-based selection, considering experience of firm, team, references, and technical approach.

### Advantages

- Quick results
- Generates information about the system

### Where It Works

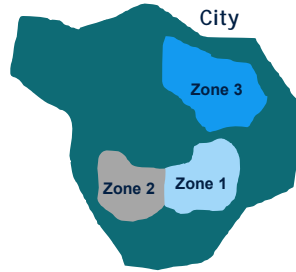
- NRW data is unavailable or of poor quality
- Utility wants quick results, but has little information on costs associated with NRW
- Environment too risky for contractor to accept performance risk.

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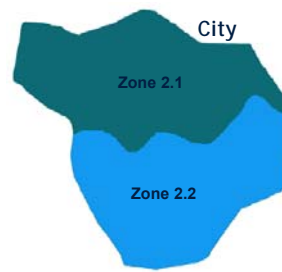
## Cost Plus in Competitive Discovery Model

### Phase 1: Discovery



- Engage 3 well-qualified contractors, each for 1 zone, on cost plus contract
- ➔ Get NRW reduction quickly
- ➔ Open book: learn the cost function
- ➔ 3 Contractors are now 'in the market'

### Phase 2: Scale Up



- Decide on contract type: DBOM or SO 24/7
- Decide on number of zones
- Phase 1 contractors that performed well and other qualified firms invited to bid.

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## Conclusion



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## Questions? Contact us

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