

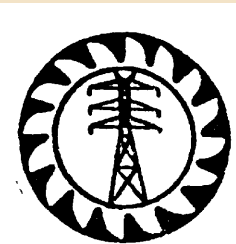
**SOUTH ASIAN
UTILITY STRATEGIES
CUSTOMER SERVICE AND BILLING
PROGRAMS**

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CEYLON ELECTRICITY BOARD

**SOUTH ASIA REGIONAL ENERGY DISTRIBUTION UTILITIES PARTNERSHIP
EXECUTIVE EXCHANGE PROGRAM – NEW DELHI**

February 23-25 2004



PRESENTATION SUMMERY

- **Country Profile**
- **Service Strategy**
- **Customer Service Standards**
- **Communicating with customers**
- **Cost Reduction Program**
(Distribution Loss Reduction)
- **Billing/ Collection practices**

COUNTRY PROFILE

Area: 64455 sq. km.

Length: 432 km.

Width: 224 km.

Temperature In the

(A) hill Country : 18 deg.C

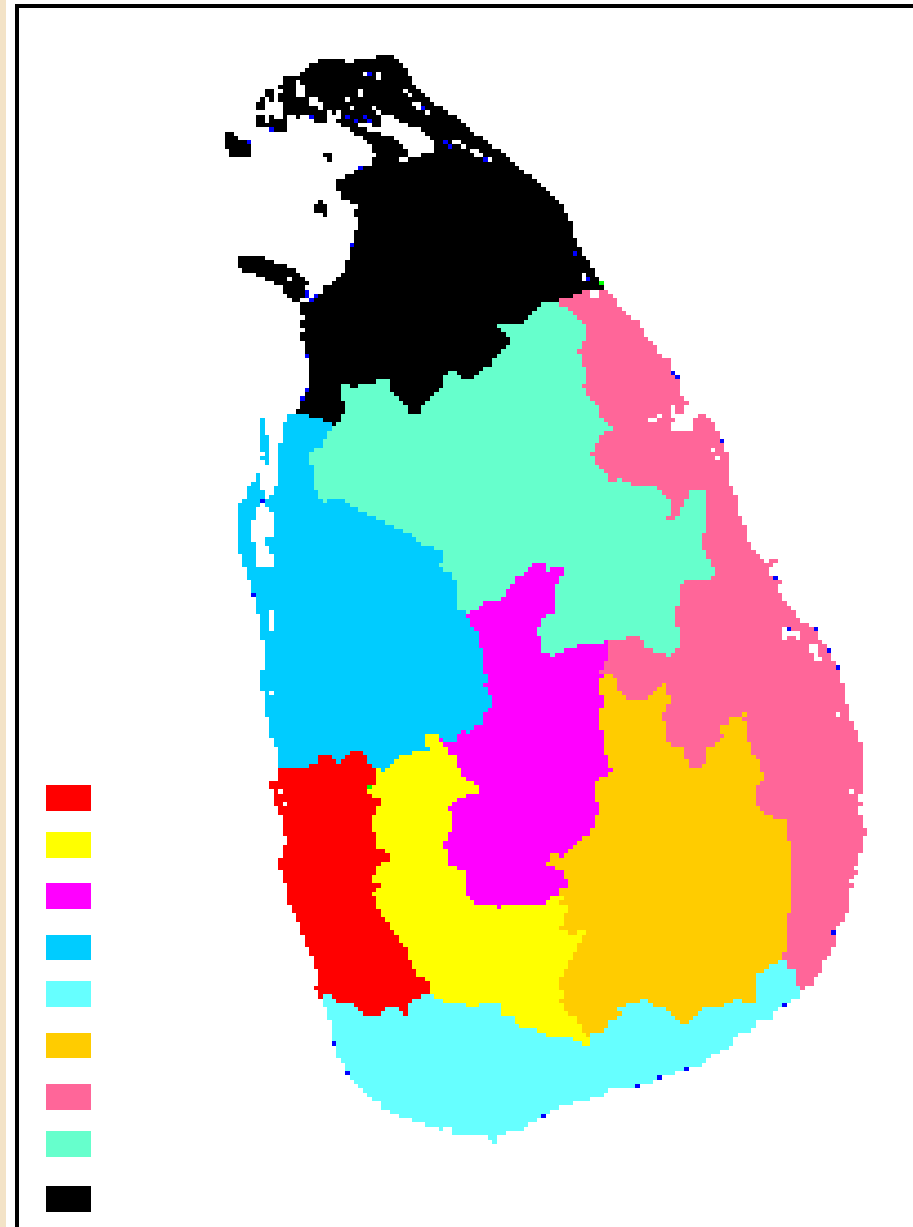
(B)Along the Coastal :27.5 deg.C

**History : Civilization of over 2500
years**

British Colony – 1815

Independence in 1948

**Sri Lanka has 9 Provinces
and 25 Districts**



Ceylon Electricity Board

- **CEB is a Government Statutory Organisation responsible for**
- **Generation , Transmission and 85% of distribution (except in areas covered by LECO) in the entire Country**

SUMMARY OF STATISTICS

No. of Power Stations - 42

- Installed Capacity - 1900 MW
- Maximum Demand - 1445 MW
- Gross Sales - 5502 GWh
- No. of Consumers - 2.9 Million
- Length of Lines
 - 220 kV - 331 km
 - 132 kV - 1485 km
 - 33 kV - 17732 km
 - 11 kV - 1636 km
 - LV Lines - 68810 km
- No of Substations
 - Grid - 35 Nos.
 - Primary - 119 Nos.
 - Distribution - 14482 Nos.

SERVICE STRATEGY

- **To provide a safe and reliable electricity supply to the customers at internationally competitive prices effectively & efficiently.**
- **Fast and efficient restoration of supply during outages**
- **Improve the quality of communication to respond to customer concerns and issues in courteous and timely manner**
- **Prompt response to account inquiries, bill revision by upgrading customer information systems**
- **Timely connection of new supplies**
- **Advice on energy conservation**

Customer Service Standards

- **Voltage Standard**
- **Reliability Standard**
- **Service Connection Standard**

Customer Service Standards

- **Voltage Standard**

Under normal operating conditions

Colombo City $\pm 6\%$

Urban Areas $\pm 6\%$

Rural Areas $\pm 6\%$ to -10%

Emergency Conditions $\pm 10\%$

Customer Service Standards

■ Reliability Standard

**SAIDI-System Average Interruption Duration Index
(min/year/connected consumer)**

680 For year 2002

(Accepted Value < 140)

**SAIFI- System Average Interruption Frequency Index
(Interruptions/year/Connected consumer)**

5.5 For year 2002

(Accepted Value < 3)

*** Objective is to reduce by 10% each year until acceptable level is received.**

Customer Service Standards

- **Service Connection Standard**

Provide Retail Service (<42 kVA) Connection within one week from the date of payment.

Provide Estimate for Bulk Supply Service (<1 MVA) within two weeks and provide connection within six weeks from the date of payment.

Communicating with Customers

- **Customer Service centers for activities related to**
 - * **New retail service connections**
 - * **Breakdown complains**
 - * **Connected customers**

- **Distribution Control Centers for**
 - * **Quick response to customer fault reporting**
 - * **Arrangement of interruptions**

- **Area Engineer's office for**
 - * **Quick bill inquiries (Bulk & Retail)**
 - * **Other customer complains**
 - * **Customer education**

- **Commercial Engineer's office for**
 - * **Bulk supply connections and payment inquiries**
 - * **Rural Electrification Projects**

- **Revenue Collection centers for better & improved bill payment facilities**

Cost Reduction Program

(Reduction of Distribution system Losses)

Network Expansion Vs Losses

Year	Gross Generation (GWh)	Consumers x 10 ⁶	MV km x 10 ³	LV km x 10 ³	Dist. SS Nos. x 10 ³	System Loss (%)	Distribution Loss (%)
1990	3149	0.74	12.6	21.8	7.0	17.2	12.2
1991	3376	0.88	12.9	24.4	7.3	18.8	13.8
1992	3540	1.07	14.1	30.0	8.0	19.0	14.0
1993	3979	1.27	14.7	34.3	8.7	17.8	12.8
1994	4365	1.41	15.7	38.6	9.2	18.3	15.1
1995	4782	1.52	16.0	41.8	9.7	18.1	13.1
1996	4377	1.69	16.4	42.2	10.1	18.0	13.0
1997	4911	1.85	16.8	44.7	10.6	17.7	12.7
1998	5569	2.02	17.2	46.3	11.3	18.8	13.8
1999	5569	2.22	17.6	48.0	12.0	20.8	15.8
2000	6077	2.49	18.2	56.4	12.5	21.6	16.6
2001	6686	2.68	19.3	63.4	13.6	19.6	14.1
2002	6810	2.80	20.3	70.9	14.5	19.4	13.6

■ Avg. Demand Growth	=	7%	■ Avg. SS Growth	=	6%
■ Avg. MV Line Growth	=	4%	■ System Loss Increase	=	1%
■ Avg. LV Line Growth	=	9%	■ Distribution Loss Increase	=	1%
■ Avg. Consumer Growth	=	12%			

Distribution Losses

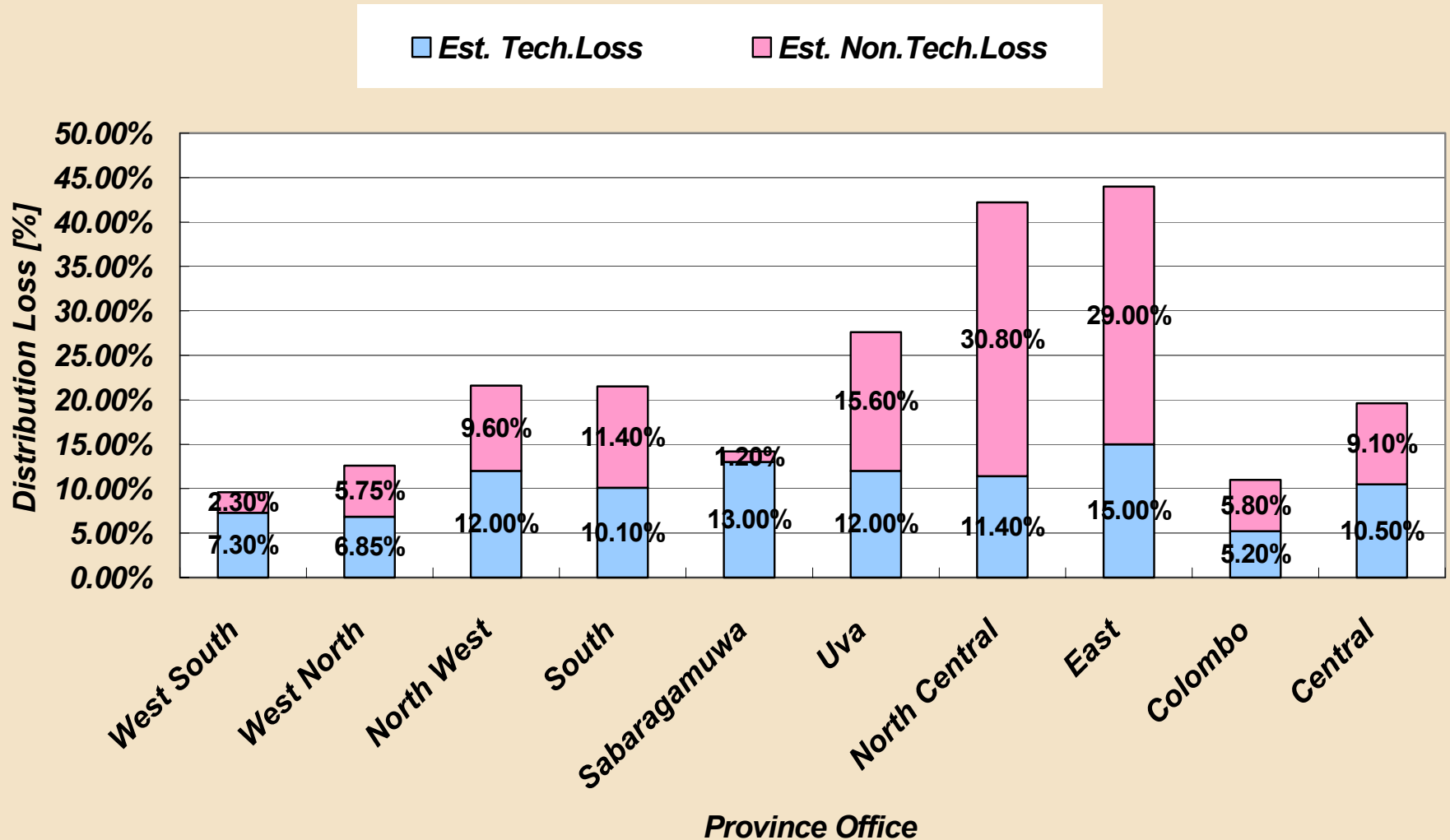
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graph TD; A[Distribution Losses] --> B(Technical); A --> C(Non Technical);
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Technical

Non Technical

Non-Technical Loss & Technical Loss

CEB Distribution Losses in 2000



TARGETS FOR DISTRIBUTION LOSSES

- Present Distribution Losses are 13.6% from net generation
- Target to be achieved in 2010 is 8.4%

**Plans for
Distribution Loss Reduction**

Medium Voltage Tech. Loss Reduction Programs

Program 1-Express Lines and Gantries

303km of Backbone lines and 27 nos. of Gantries
Construction Cost – 3761MRS

Program II-

Development Lines and MV Reconductoring
750 km of Development Lines
442km of MV line Reconductoring
Construction cost 1566MRS

Program III-

Primary Substations
5 nos. of 2x10MVA PSS
4 nos. of 2x5 MVA PSS
Construction cost 450MRS

LV TECH. LOSS REDUCTION PROPOSALS

1. Load Balancing of LV Schemes

1. Construction of New Distribution Substations

2. Conversion of Single Phase Lines to Three Phase

3. Reduction of Length of Three Phase Distributors to 1.8 km. for Rural Schemes and lower distances for urban schemes.

4. Construction of only Three Phase lines for new RE Schemes.

REASONS FOR NON TECHNICAL LOSSES

- **Illicit Tapping**

- Direct Tapping
- By passing Service/Meters

- **Billing Errors**

- Wrong Readings
- Wrong Entries
- Unbilled Consumers

- **Un-metered Supplies**

- **Meter Errors**

(Boundary meter errors + Consumer meter errors)

- **Unauthorized Street Illuminations**

Non-Technical Loss Reduction Plans

- Fixing Meters for un-metered connections and Replacement of old meters
- Fixing of Bulk Supply meter cubicles
- Fixing of Meter Cubicles for Small Industries
- Fixing of 3 Ph. Meters for Small Industries.
- Fixing of Energy Meters for Consumer Substations and loss evaluation
- Single Phase meter testing in areas
- Spot checking of illicit tapping.

DISTRIBUTION LOSS REDUCTION PROGRAM

Item	Cost Rs. Million	Period	Present Losses	Reduction in losses	Expected Losses at the end of Program
MV Loss Reduction Short Term Plan Long Term Plan	700 5777	2002-2005 2002-2010	2.5%	0.75 %	1.75%
LV Loss Reduction Program	4300	2003-2010	6.5%	2 %	4.5%
Non-Technical Loss Reduction Program	400	2003-2010	4.6%	2.5 %	2.1%
TOTAL	11177	2002-2005	13.6%	5.25 %	8.35%

Billing/ Collection Practices

Aim

The aim of this presentation is to illustrate the working procedure of the consumer billing system and the revenue collecting system.

Overview

- The CEB is the major electricity utility in the island and in every month the CEB issuing about 2.9 million bills for ordinary consumers and about 6000 bills for the bulk consumers.
- At present CEB practicing “Monthly Instant Billing” where consumer is billed in every month and bill is given to the consumer as soon as reading the electricity meter in the consumers premises.

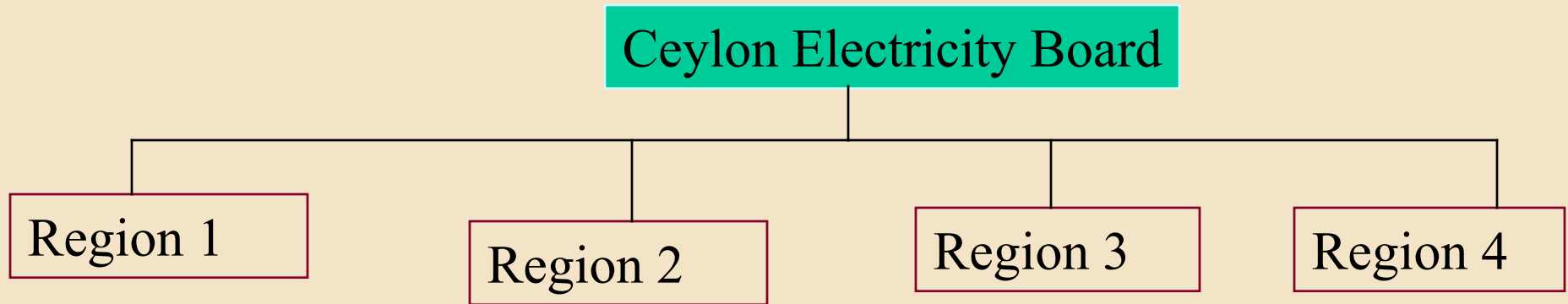
Contents

- History of the consumer billing in the CEB.
- The consumer base.
- The centralized billing system (Old system)
- The de-centralized billing system (New system)
- Electricity meter reading cycle.
- The electricity bill.

History of the Consumer Billing in the CEB

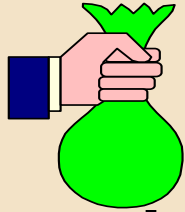
- The CEB established in 1969.
- The first computerized billing started in 1980.
- The first computer system installed in 1984
- The instant monthly billing started in 1988.
- The by-monthly billing started in 1989.
- The de-centralization of the billing system competed in 1999.
- The de-centralization of revenue collection completed in 2001.

The consumer base....



2.9 million ordinary
6000 bulk consumers

The Centralized Billing System.



No payment boundaries.

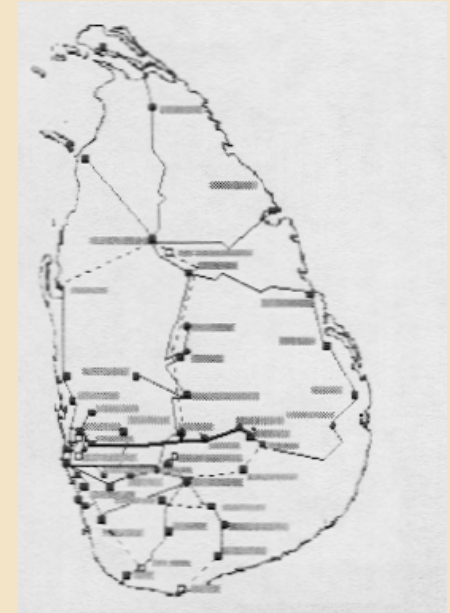


Cash Updating
Bill Calculation.
Bill Printing..

Meter Reading, Amendments



Bills, Reports



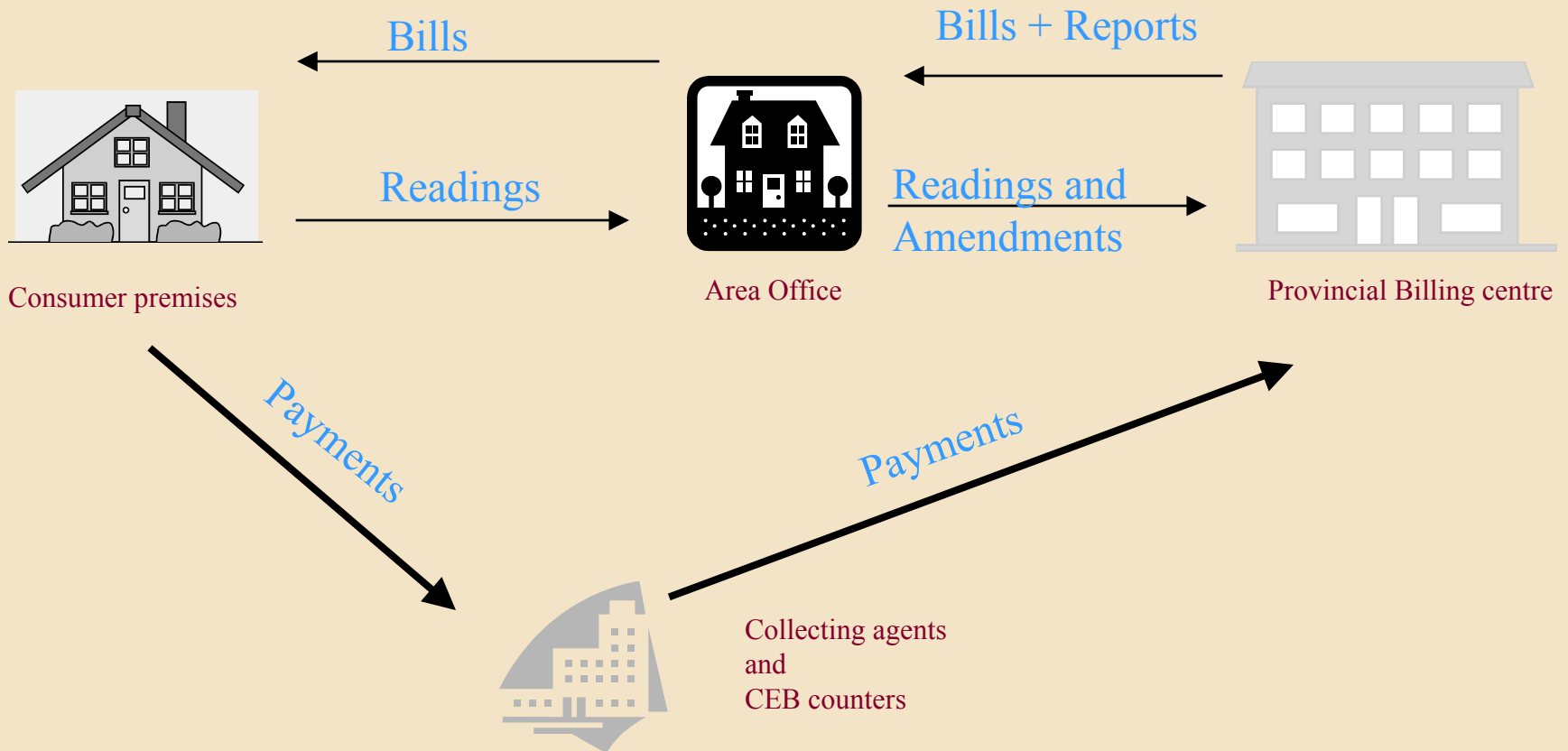
Operated before 1999

Meter reading collected under the supervision of the Area Electrical Engineer.

The De-centralized Billing System

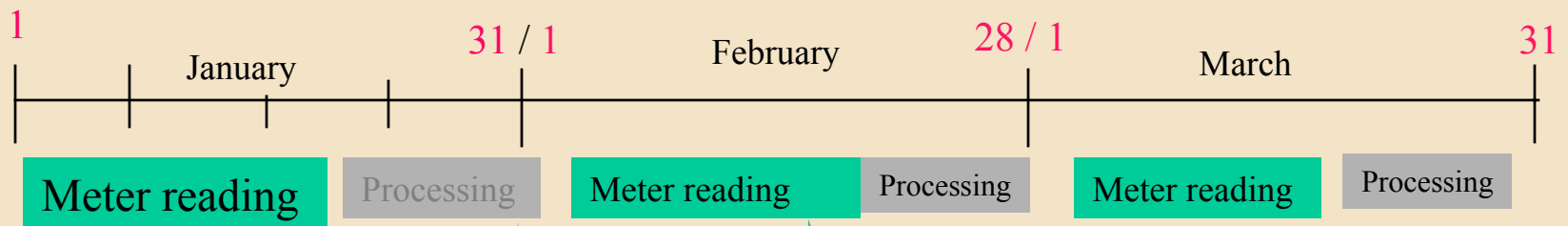
- This system operate under the supervision of the provincial DGM.
- It consists of two sub systems operated on
 - Provincial billing centre in the Province office
 - runs in UNIX environment developed using INFORMIX on-line RDMS.
 - Area electrical engineer's office.
 - runs in DOS/Windows environment.

The De-centralized Billing System...



Meter Reading Cycle

in the Centralized system (Old system)



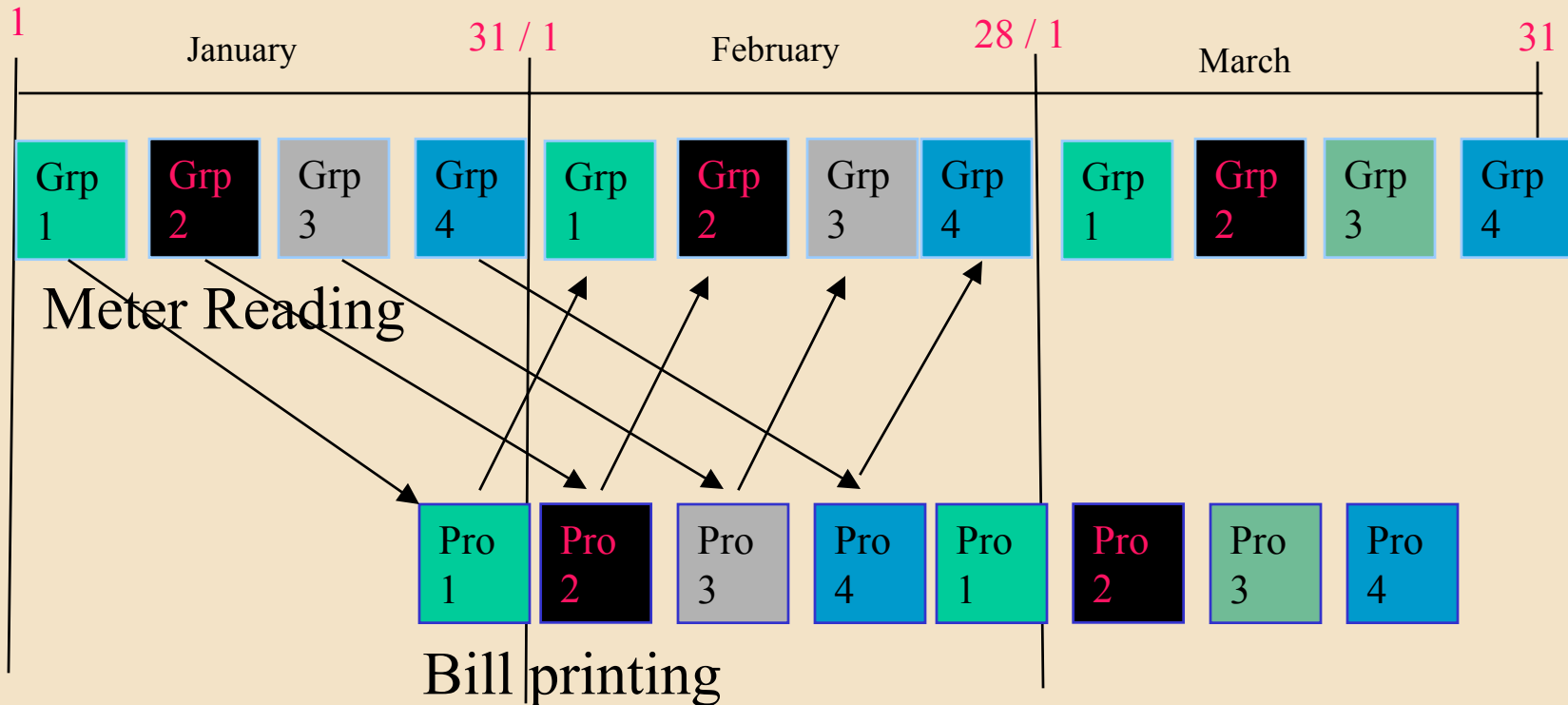
All the reading collected and Entered to a Computer send them to the CEB Head Office

Payment updated and print bills (February bill)

End consumer Bills printed about 25 days before.

Meter Reading Cycle

in the de-Centralized system (New system)



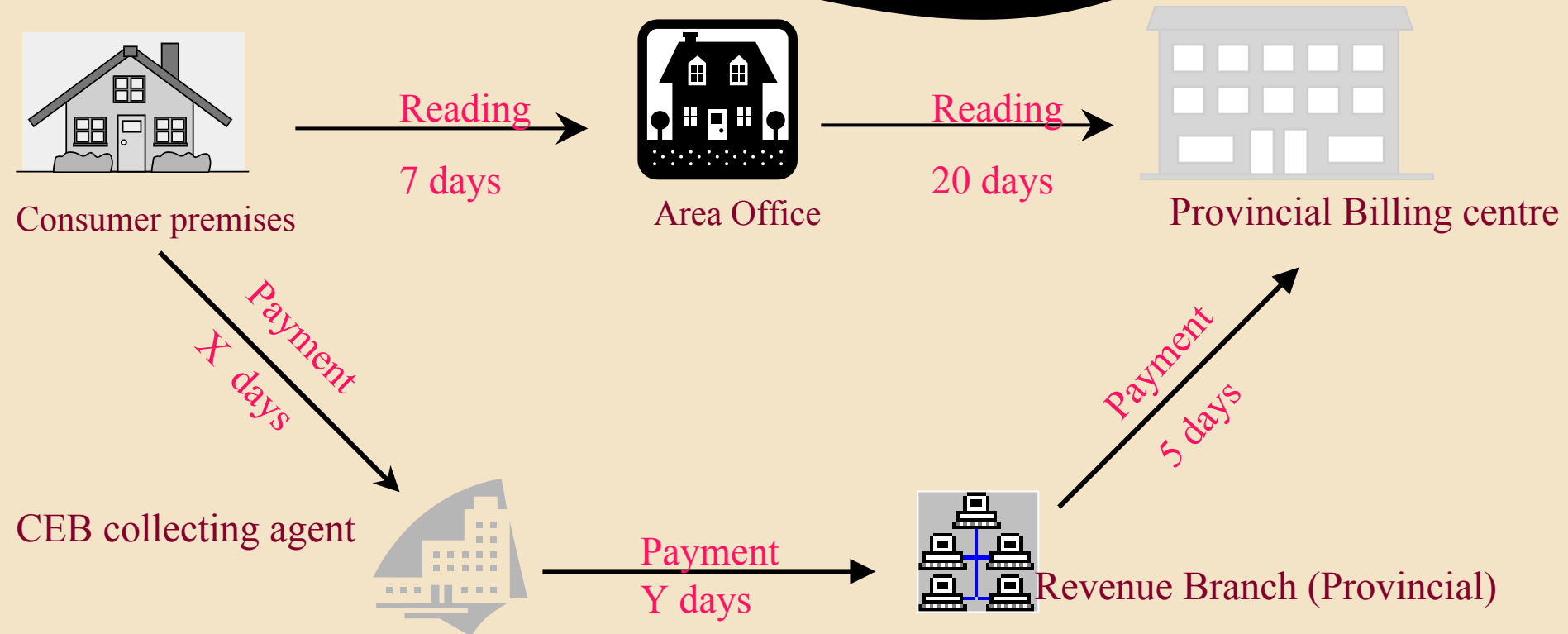
Bills printed just before it need

Revenue Collection.

- In the centralized system (Old system) payment can be made to any collecting agent in the island.
- But in the de-centralized system (New system) payment boundaries defined.
- Separate bill (Number) for each province.
- Payment options
 - CEB counters
 - Commercial banks
 - Rural banks
 - Post offices
 - Authorized Collecting agents

Updating Bill Payments

If $(X+Y+5) > 27$
Payment is not printed in the next bill



END

Thank You