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# Improving Power Distribution Company Operations

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## Outline of Presentation

- **Why is a Handbook on Improving Distco Operations Needed?**
- **A Strategic Approach to Operations Improvement**
- **The Key Principles Identified for Implementing Successful Operational Improvement Programs**
- **Tool kit for Operational Improvement**
- **Effective Tactics for Applying the Toolkit**
  - **Segmentation**
  - **Geography**
  - **Customer Service**
- **Conclusions**



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## **The Need for an Operations Improvement Handbook**

- **Distribution sector is in a state of chronic disrepair, both technically and fiscally – but is the key source of sector revenue !**
- **Disappearance of private investors; no white knight on the horizon**
- **This is a time for ‘self-help’, so the target audience is emerging market utility management**
- **This handbook draws upon this rich body of experience and attempts to craft a new approach to improve distribution performance based on project experience**

# Focus of the handbook: Improvement of utility operations

There are three areas where improvements can be made in the utility sector

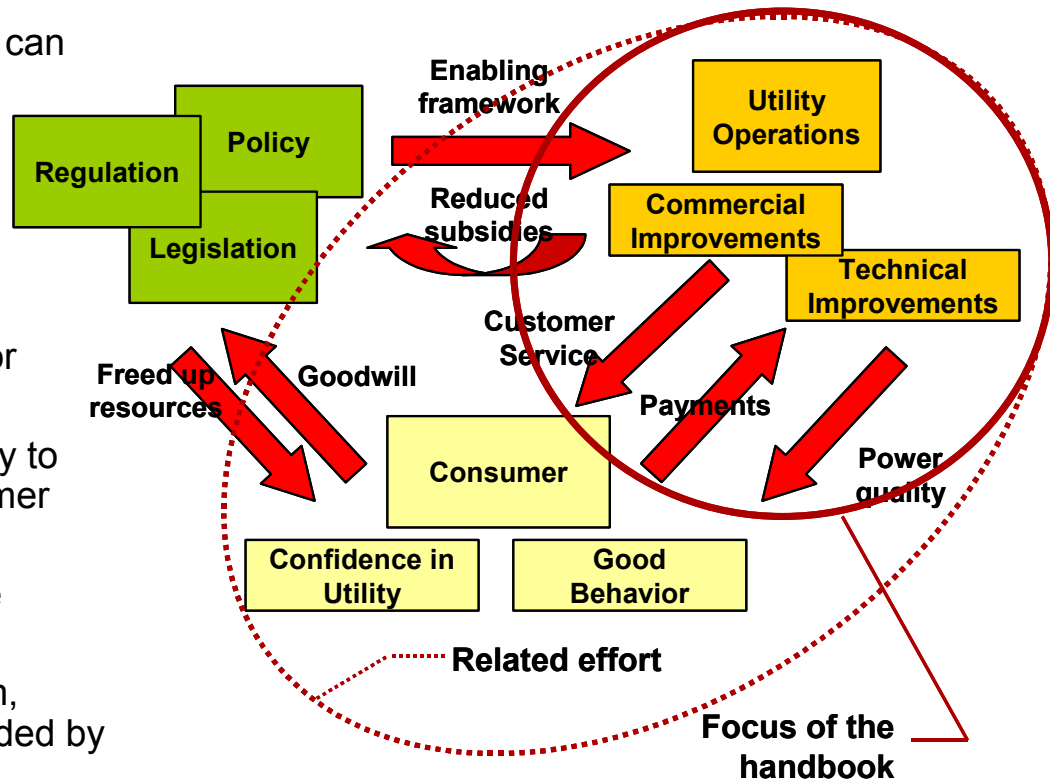
- Policy and legal
- Consumer behavior
- **Utility operations**

This handbook focuses on operational improvements within a utility as a catalyst for reform

Improved utility operations will go a long way to addressing chronic distrust amongst consumer groups

At the same time it will begin to alleviate the burden on government resources

Policy, while plotting a bold course of reform, should also pragmatically reflect and be guided by operational realities



***The goal of this handbook: Enhance the utility's core business***

It is important to get the commercial foundation built and reinforced and use that strength to then systematically tackle pandemic challenges



# Strategic Approach to Operations Improvement: Transition from state bureau to commercial enterprise

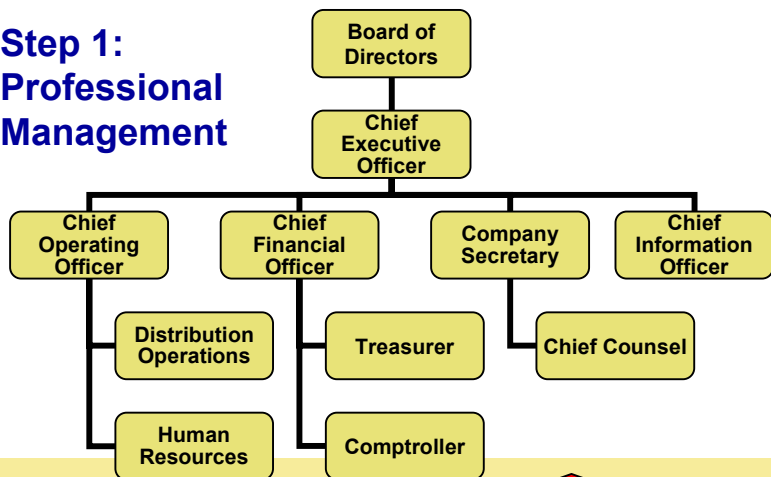
- **Introduce professional management**
  - Restructure management to reflect a modern corporation
  - Functions and titles need to be matched with management expertise/capability
  - Incentivize individual performance
- **Focus on increasing revenue and reducing costs**
  - Work with current tariff structure first
  - Measure inputs and sales – meter everything
  - Reduce outstandings by issuing proper bills and collecting those bills
  - Plug leaks, remove illegal connections
  - Improve customer service and, by extension, customer satisfaction
- **Create a master program for commercial change**
  - Management needs to preside over development of an integrated, global, master plan for performance improvement
- **Measure performance**
  - You cannot manage what you do not measure
  - What gets measured gets done
  - Establish baselines
  - Track improvements and struggles
  - Back measured by incentives



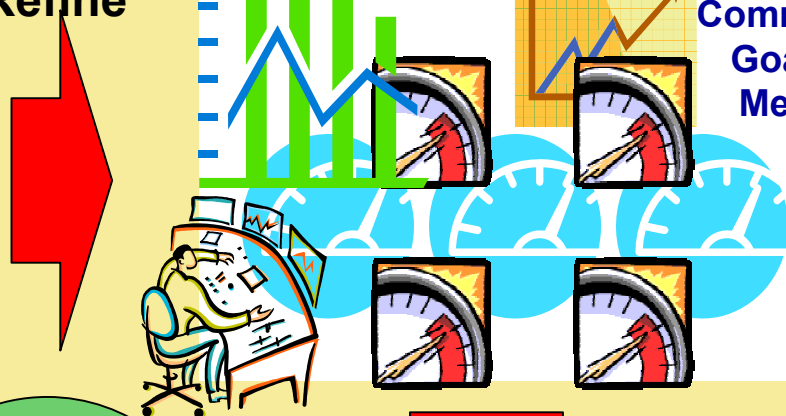
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# Transforming the utility: corporatize & commercialize

**Step 1:  
Professional  
Management**

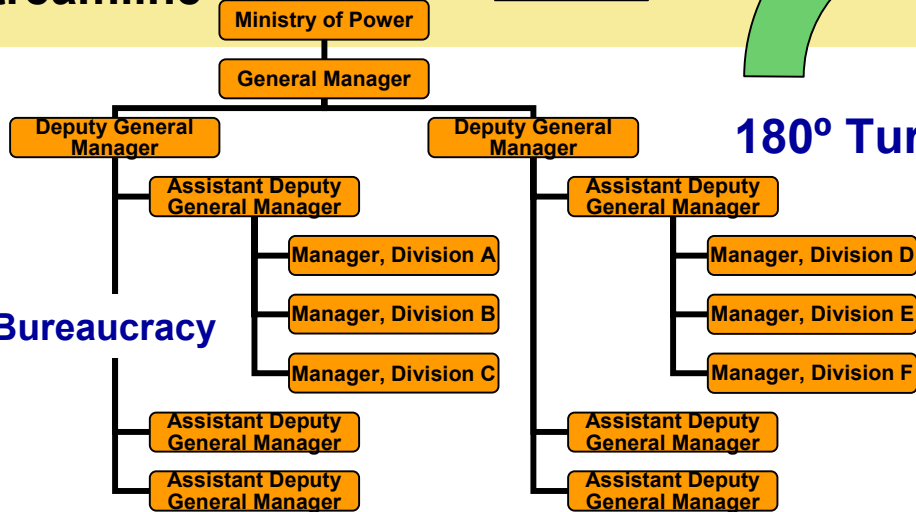


**Measure and Refine**



**Step 2:  
Commercial  
Goals and  
Measures**

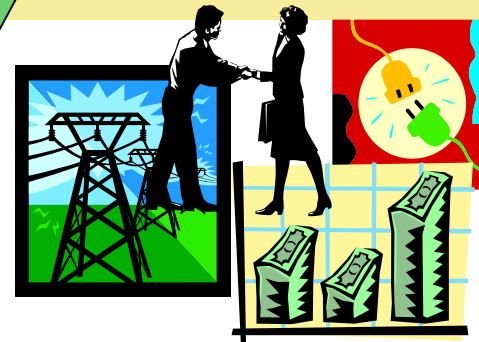
**Corporatize and  
streamline**



**Bureaucracy**

**180° Turnaround**

**Serve and Succeed**



**Customer Service  
Quality Service**



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## **Condition precedent: Institutional support is needed to enable and sustain operational improvement**

**The operational improvement process requires support from the government and regulator in order for it to succeed.**

There are number of areas from which this support can come:

- ***Political support***
  - Refrain from using the power sector as a political tool for currying favor from certain constituencies
  - Transparently grant subsidies and explicitly account for them in budgets but outside the operating environment of the utility
- ***Legislative support***
  - Cede utility oversight to an independent regulator
  - Criminalize theft of power
  - Give the utility the right to disconnect delinquent customers
- ***Regulatory support***
  - Create commercially oriented tariff policy
  - Monitor utility customer service performance
  - Audit utility finances to assure money is being spent wisely and to assure there is sufficient funding

**We acknowledge that without enabling policy, legislation, and regulation and the will to enforce change, the utility's ability to institute operational improvements is greatly diminished.**



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## **Principles Identified for Successful Operational Improvement**

**There are four key principles we recommend to guide planning for improvement:**

- 1. The primary source of money flow into the power sector should be from collections**
- 2. Ownership is not an issue for achieving improving commercial performance**
- 3. Customer service and financial health go hand in hand**
- 4. A program of incremental change is the key to success**

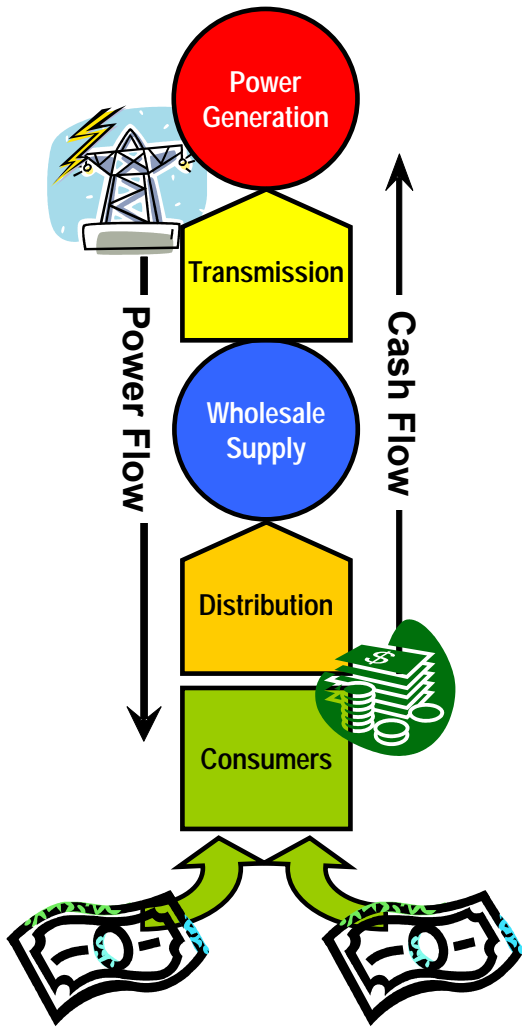
**We discuss these in turn...**





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# Principle 1: Money flows into the utility value chain from collections



**The best way to improve operations is to get more cash into the system from customers**

**Whether or not tariff covers costs, the principle of payment for service must become habitual; it is the only hope for increasing tariffs in the future**

**In a commercially operating utility system, consumer collections are the only true source of money for the rest of the value chain**

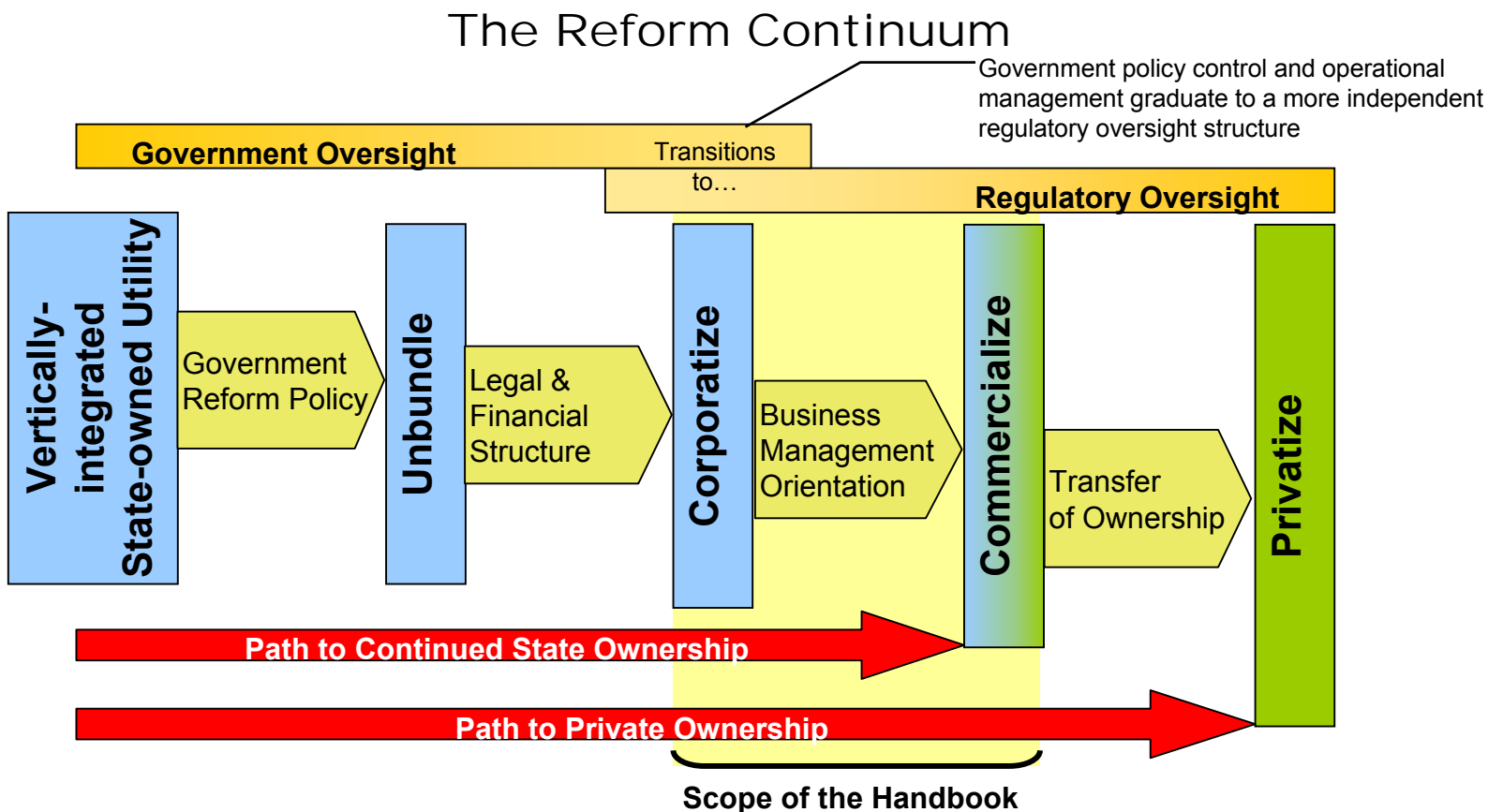
- Generators sale price of bulk power includes fuel costs, operation and maintenance costs, and capital recovery
- Bulk power purchases embody costs for transmitting the power purchased from generators
- The distribution utility collects consumer tariffs to pay for distribution operations and maintenance, capital investment and bulk power purchases

**In the event of a shortfall in consumer revenue, there are few alternatives**

- Government subsidies
- Chronic indebtedness
- Bankruptcy

## Principle 2: Ownership is not an issue for improved commercial performance

Whether a utility is privatizing or commercializing, operational improvement requires the same steps





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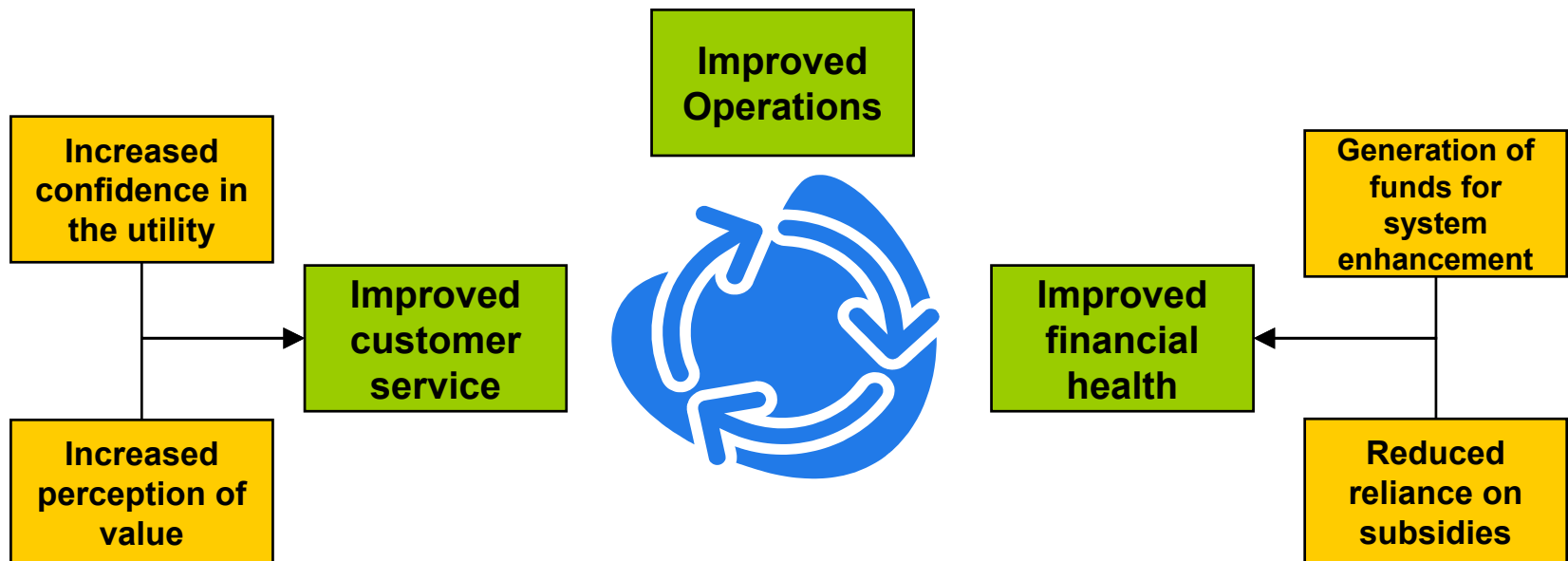
## Principle 3: Customer service and financial health go hand in hand

We target two key outcomes from operational reform and improvement

- Improved financial health
- Improved customer service

There is a mutually reinforcing, symbiotic relationship between improved customer service and improved financial health:

**Willingness to pay and Willingness to serve**

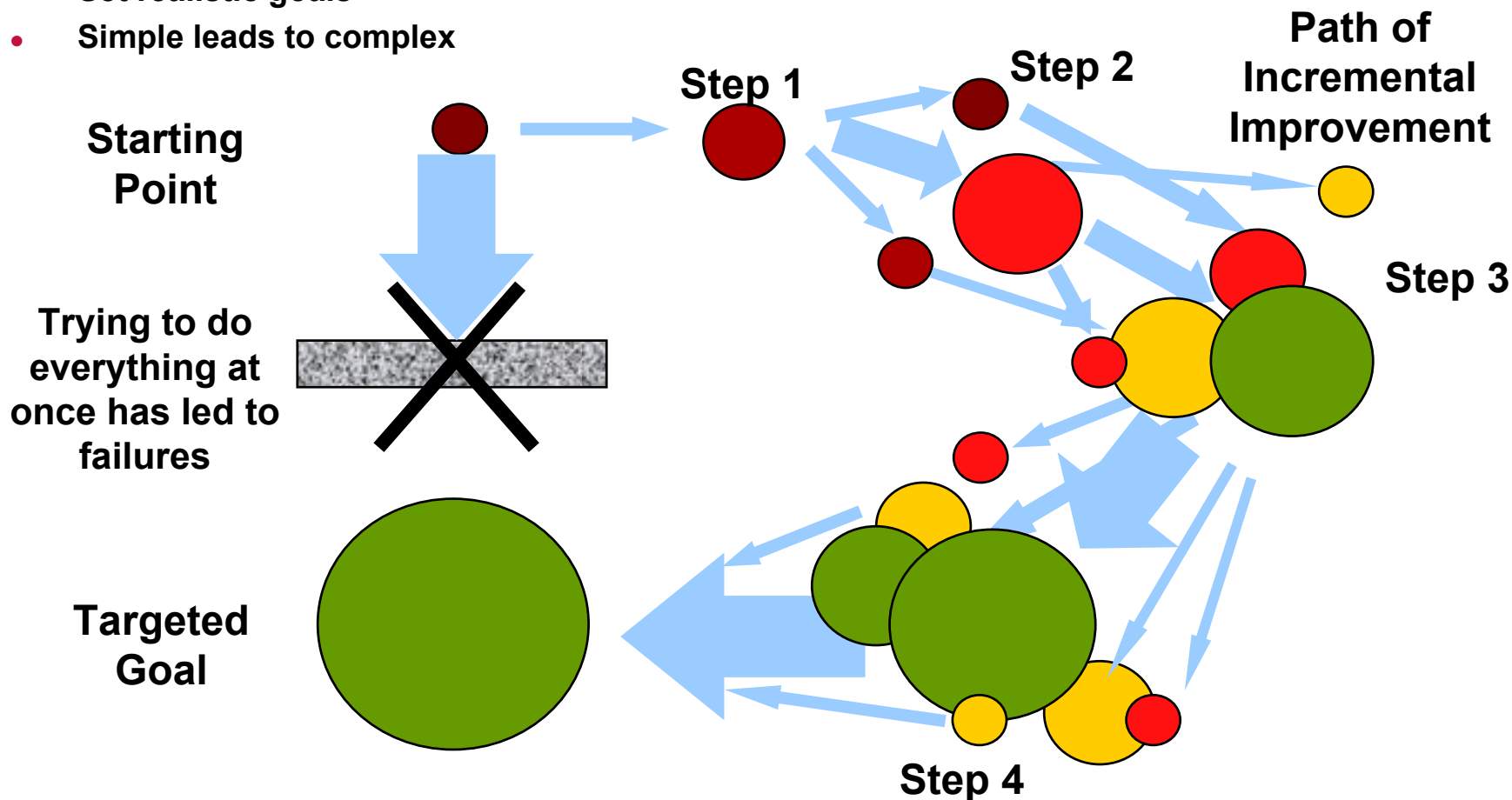




## Principle 4: Incremental change is good

The handbook is premised on a program of *incremental* improvement

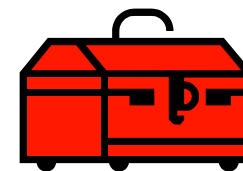
- Success breeds success
- Set realistic goals
- Simple leads to complex





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## Tool kit for Operational Improvement



There are four areas that are within the utility's purview to affect change and that can dramatically improve their fiscal and operational health:

- **System energy balances** Enables utilities to determine where the greatest sources of technical and commercial loss take place by measuring at multiple points in the distribution system the difference between purchased power and power ultimately billed.
- **Expanded metering** Covers metering for revenue, network monitoring, and regulatory mechanisms
- **Upgraded customer information systems** The general category of CIS has the goal of providing an accurate customer database, improved billing and collection results, and ultimately providing improved customer service
- **Improved cash collection efficiency** There are many ways to improve both top line revenue and bottom line profitability of the utility; some employ technology, others are simple human processes.



## Electricity Metering – Key Issues

- ***Metering hardware is not, by itself, enough to realize the benefits of the investment in metering.*** Ancillary programs for data acquisition, billing and collections, calibration and maintenance, security, tamper-proof connections, and customer information are critical to the success of the metering program.
- ***A dedicated metering program management and implementation unit*** within the utility is necessary to ensure adequate program management and financial control.
- ***An open and transparent procurement program*** will add credibility to the utility's metering program.
- ***Open and constant communication within the utility*** (i.e. other organizational units such as finance, billing, maintenance, etc.), is necessary to ensure a holistic approach and that adequate interfaces are established.
- ***Public outreach and communication are an important*** element in any metering program.
- ***External communications*** with government bodies, the regulator, and others will enhance the utility's ability to successfully implement the metering program.
- ***Adequate time and effort*** to develop a suitable equipment design, vendor selection criteria, and bid evaluation process will save the utility money and ensure a credible cost-benefit ratio for the equipment purchased
- Above all, ***the management of the utility must be 100% committed*** to the metering program.
- ***Accountability is the key element that metering provides*** to a distribution company moving toward commercial operations



## Electricity Metering – Program Design

### KEY ELEMENTS

- Supply/Demand Profile
- Loss Reduction Survey
- Meter Characterization Survey
- Metering Improvement program
- Data Acquisition and Utilization Systems
  
- Calibration & Maintenance
- Monitoring
- Public Outreach
- Institutional
- Ownership
- Theft & Tampering

### RESULTS

- Identify high use end consumers
- Know where losses occur
- Identify meter type/applications
- Comprehensive metering program
- DAQ needs and billing/collections interface defined
- Cal & Maint programs in-place
- Monitoring systems in-place
- Public informed
- Institutional needs addressed
- Ownership established
- Theft & tampering mitigated



## Electricity Metering – Armenia Case Study

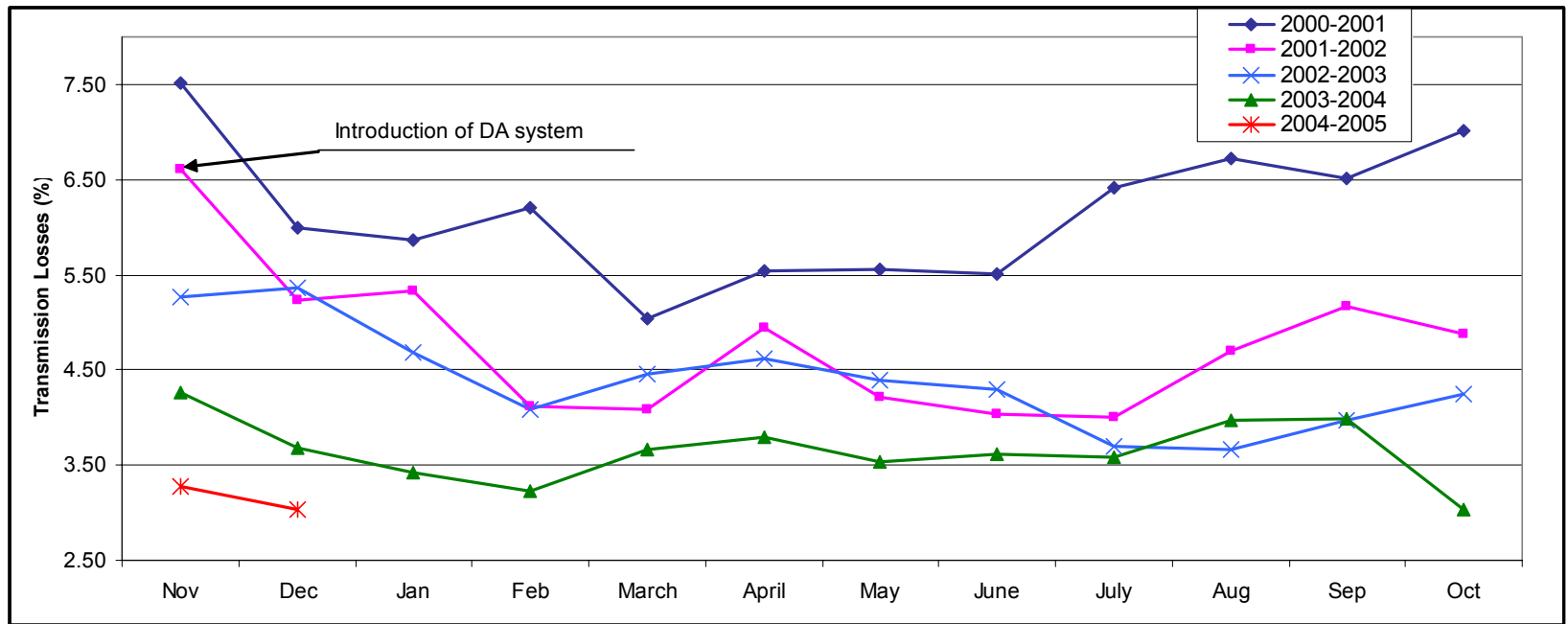
- **Customer Metering, Billing and Collection System was developed and implemented covering 25% of the country's customers.**
- **Over 11,000 new tamper resistant meters along with an integrated Data Acquisition System were installed at all power plants, transmission network and major nodal points of the distribution network for financial settlement.**
- **The system transmission losses have been reduced by over 40%, due to the metering project. The savings since the completion of the project in November of 2001 have been over \$7.0 million.**
- **Distribution Company (serving the entire country) was privatized in November of 2002 mainly due to the ability to provide system energy balance and ability to pinpoint theft. The new owner has honored its commitments, and has paid for 100% of its obligations for the last 28 month;**
- **The electric sector financial losses have been reduced by \$50 million per year due to privatization;**
- **The Distribution sector's commercial losses have been reduced to less than 5% (from 23%);**
- **Collection for sales of electricity has been 100%;**
- **Transparency in the sector entities due to metering and DA system;**
- **Distribution technical losses have been reduced by 25%.**





# Electricity Metering – Armenia Case Study

## Reduction in Transmission Losses (%) 2000 - 2004





# Tactical approach: Segmentation

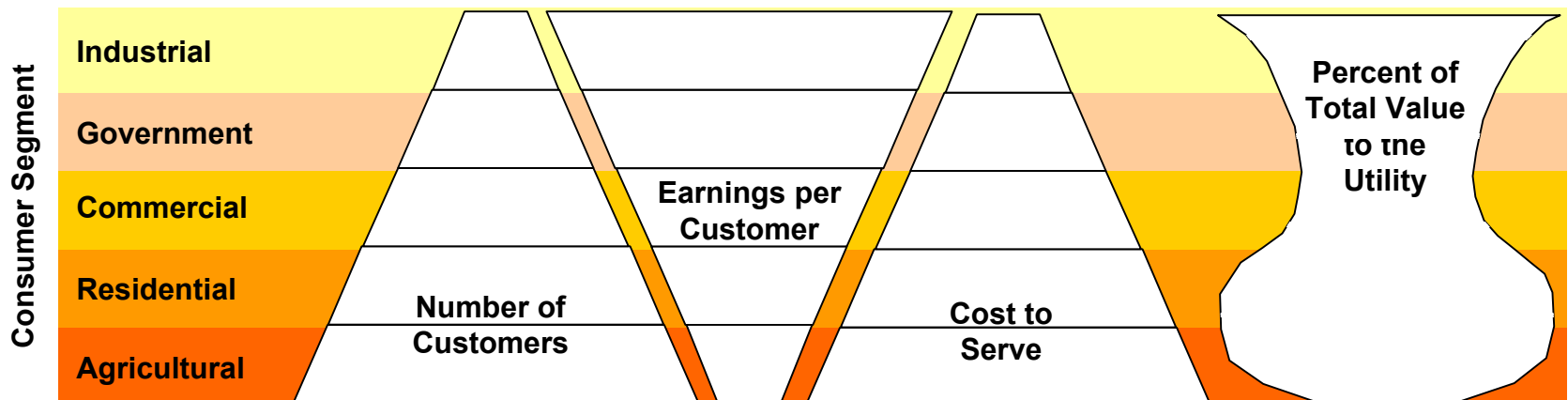
## Prioritize improvement programs by customer class

It is easier to focus initially on a small number of high value customers first and expand toward more numerous and complex constituencies as the improvement program progresses

Example:

- There may be only a small number of large industrial customers, but the associated earnings per customer have the potential of being very high
- On a per-kWh basis, the cost to serve these customers is very low
- Accordingly, their value to the utility is very high
- Correcting billing and collection issues with industrial customers can, therefore, be very remunerative

Sample Emerging Market Utility Customer-Value Relationship Comparison





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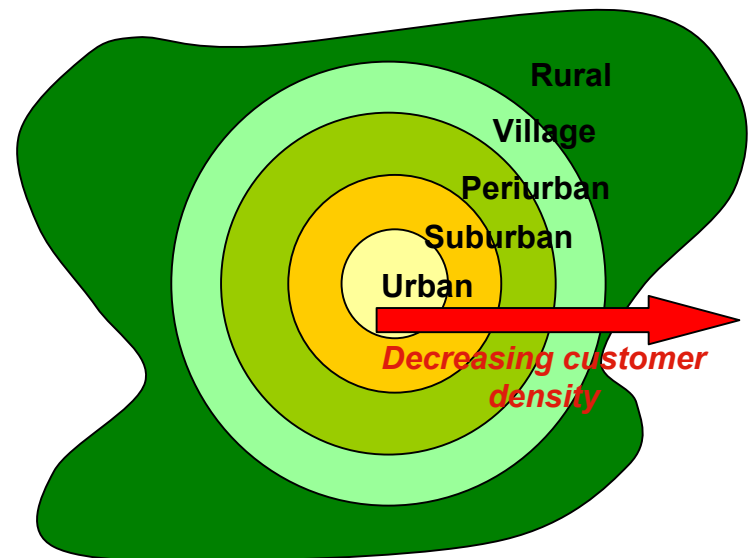
## Tactical approach: Geography Focus on 'low hanging fruit'

Prioritize reform efforts on the easiest to serve, highest value customers first, then move outward.

Density of customers is a good place to start.

- Urban customers offer the opportunity for easy-to-execute improvements, greater customer concentrations, higher probability of payment (due to higher incomes), and greater exposure/publicity amongst constituents
- Success and savings from urban reform programs can be leveraged to jump-start suburban and peri-urban programs, and so on

### Geographic Prioritization





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# Tactical approach: Customer relations

## A need to win the hearts and minds



**The more satisfied a customer is, the more likely that customer will pay**

- It should be assumed that most customers in our prototypical utility are beleaguered; a state of siege mentality. Customers typically feel powerless to affect change and have a sense of hopelessness regarding their service situation.
- Customer outreach is the most powerful, positively reinforcing tool a utility can use to promote changes in consumer behavior and cement those changes into place. It should be used as counterbalance to more blunt enforcement methods, such as shut offs.
- Researching in the field; surveys are important for gauging customer requirements

**Improved customer service pays dividends – on both sides**

- People must feel they are getting something in return for their payment
- Addressing chronic problems is important, such as response time to service calls, time to connect/disconnect, power quality and interruptions, making it easier to pay a bill

**Expand customer relations in the field during times of major change**

- When big changes are planned, such as introducing metering in previously unmetered areas, advanced customer outreach is critical
  - Tell customers what is about to happen and the expected outcome for them
- Use of field-resident ‘customer care’ representatives, especially in rural areas, goes a long way to smooth the transition to new operating practices

**If customers perceive the utility to be inefficient in providing service at reasonable cost, then it is incumbent upon the utility to first become more efficient, and secondly to communicate to customers the steps it is taking to make improvements, in an honest, straightforward manner.**



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## Recommendations – what is different about this?

- You do not necessarily need to privatize in order to achieve improvement
  - **But you do need strong political will and professional discipline**
- Executive management needs to lead the change to a commercial orientation as its top priority
- Start simple and low-tech and grow in complexity
  - **Recognize your initial technical limitations and starting competency endowment and nurture it**
- Don't try to do it all for all customers at the outset
  - **A gradual, step-wise approach may be more sustainable**
- Build a fiscal base from which to launch additional improvements
- Policy reform needs to be accompanied by operational improvements
  - **One will not automatically produce the other**



## Recommendations – what is different about this?

- **Lasting commercial improvements are fostered by both internal and external efforts**
  - **Internally, business processes must change and performance measures applied**
  - **Externally, improved customer relations and service quality will breed responsible consumer behavior**
- **Incremental progress is success; you cannot eliminate all losses and subsidies in a short period of time**
  - **Creating a habit of paying for what you use sets the groundwork for deficit reductions**
  - **Creating a culture of serving a paying customer well reinforces the will to pay**
- **Each market and each utility is unique; culture and conditions will dictate what is an appropriate approach**
  - **Solutions must be customized to each situation**