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USABLE FINANCING MODELS FOR DSM & RE PROJECTS IN THE PACIFIC: UTILITY PERSPECTIVE

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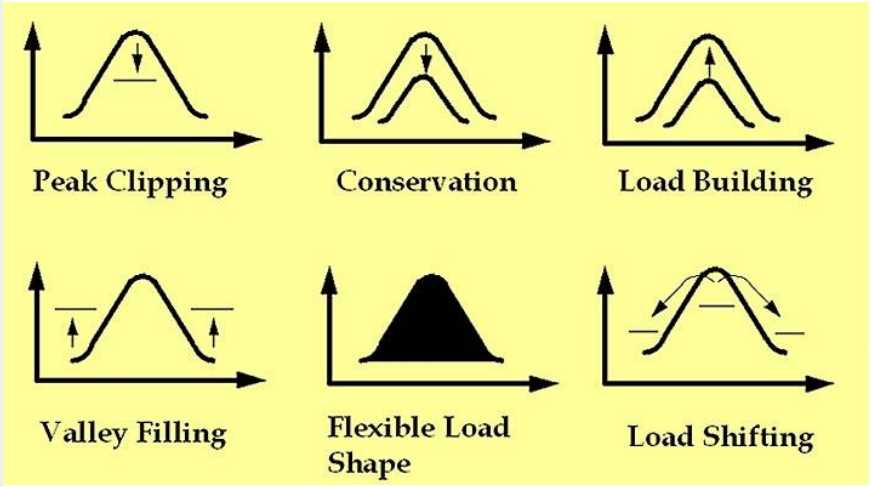
Presentation Outline

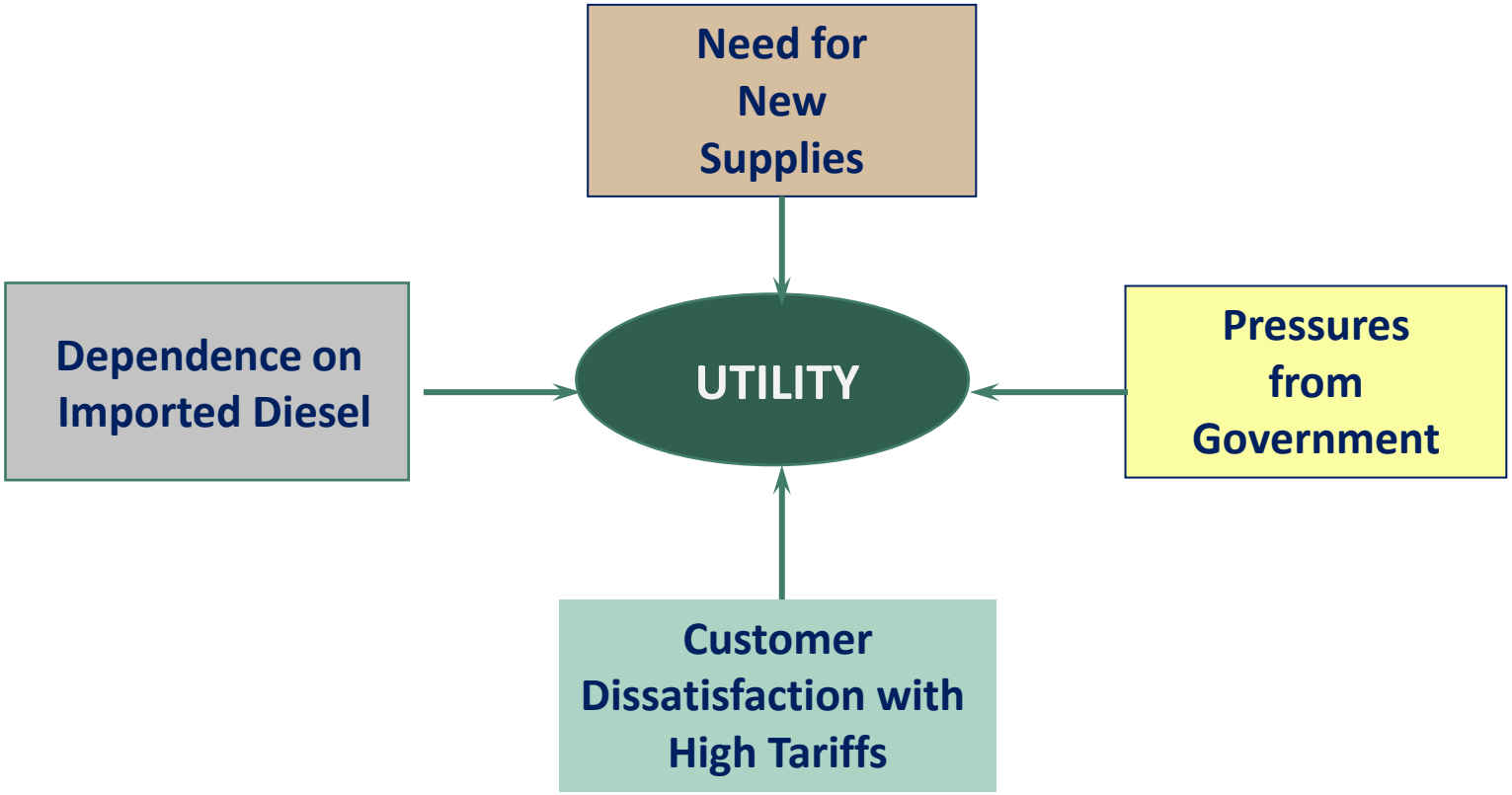
- DSM Delivery Models, types and approaches
- Applicable Financing Models
- Case Study
- Concluding Remarks

Demand-side Management(DSM)

- Utility activities on the "customer side of the meter" to modify amount and pattern of energy use with resulting benefits to the customers, utility and society
- Includes energy efficiency, load management and other initiatives



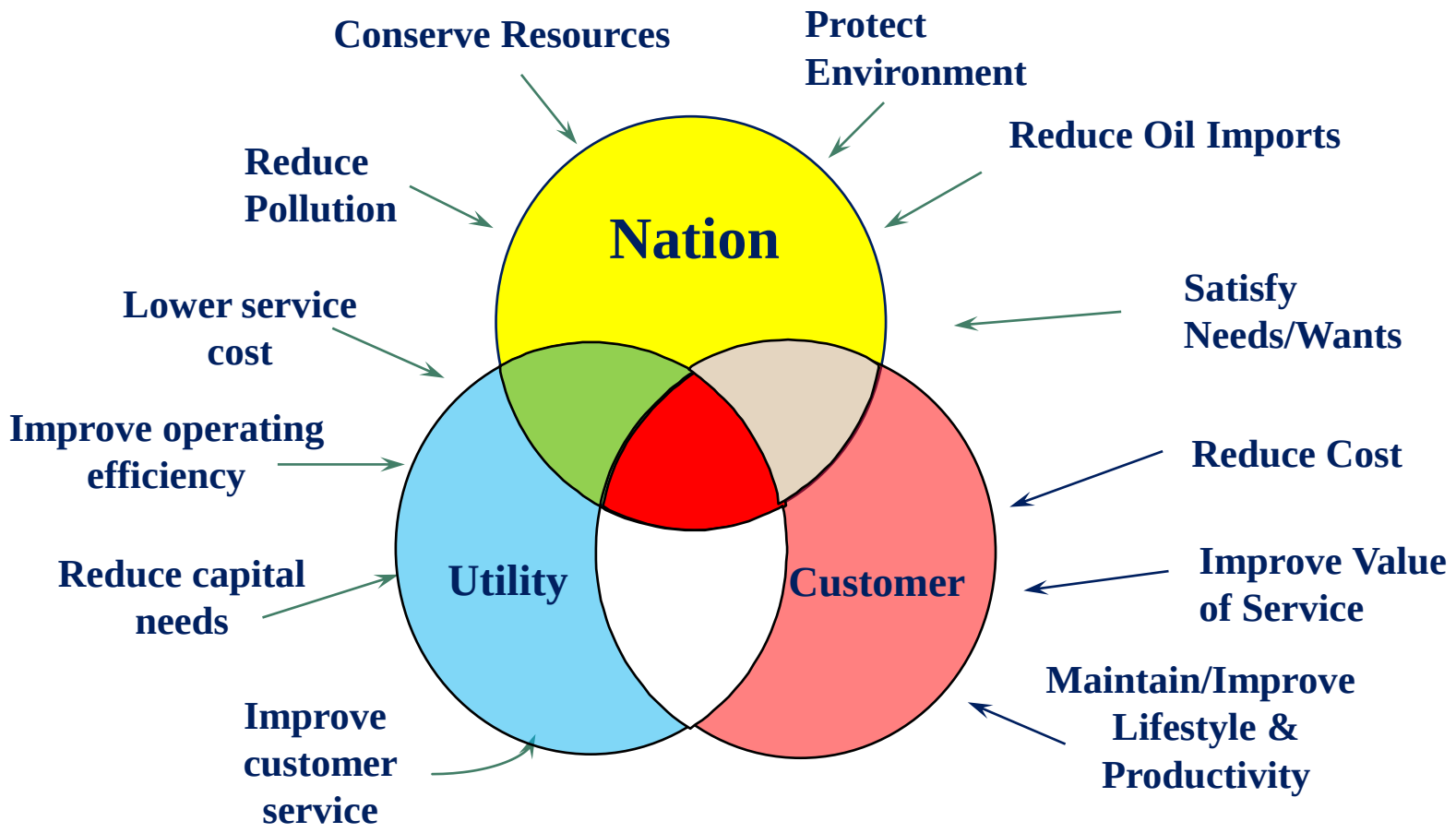
Pressures on Utilities



Why should Utilities Consider DSM?

- Supply capacity problems/limitations
- Meeting future load growth at least cost
- Dependence on imported fuels
- High fuel costs
- Tariffs below cost of service
- Good for customer relations
- National benefits

Benefits of DSM



Applications of DSM

- Residential
- Commercial
- Public Buildings
- Industrial
- Public Lighting

DSM Technology Options

- Lighting
- Air Conditioning
- Building Codes
- Appliances
- Equipment
- Motors and Pumps
- Waste Heat Recovery
- Daylighting
- Solar Water Heating
- Water Pumping


Building Envelope Measures


Lighting


Heating and Cooling Equipment


Office Equipment


Daylighting and Passive Solar Design


Reflective or "Green" Roofs


Building Codes and Equipment Standards

Applicable DSM Programs

- Efficient lighting program (CFL Distribution, building retrofit, street lighting)
- Refrigerator/ Freezer replacement program
- Equipment maintenance program
- Air conditioner timer control program
- Solar hot water program

- Energy Audit program for large customers
- Interruptible rates for large customers
- Time-of-Use Tariffs for industrial and commercial customers
- Net metering
- Smart grid

Delivery Models

- Utility Sponsored Programs - Utility procures, installs and conducts M& V
- National Programs – government is the main implementing entity with utility serving as distribution channel/ collecting agent
- Market Driven Programs - by suppliers/ retailers of energy efficient products and services. Utility is a partner to the project.

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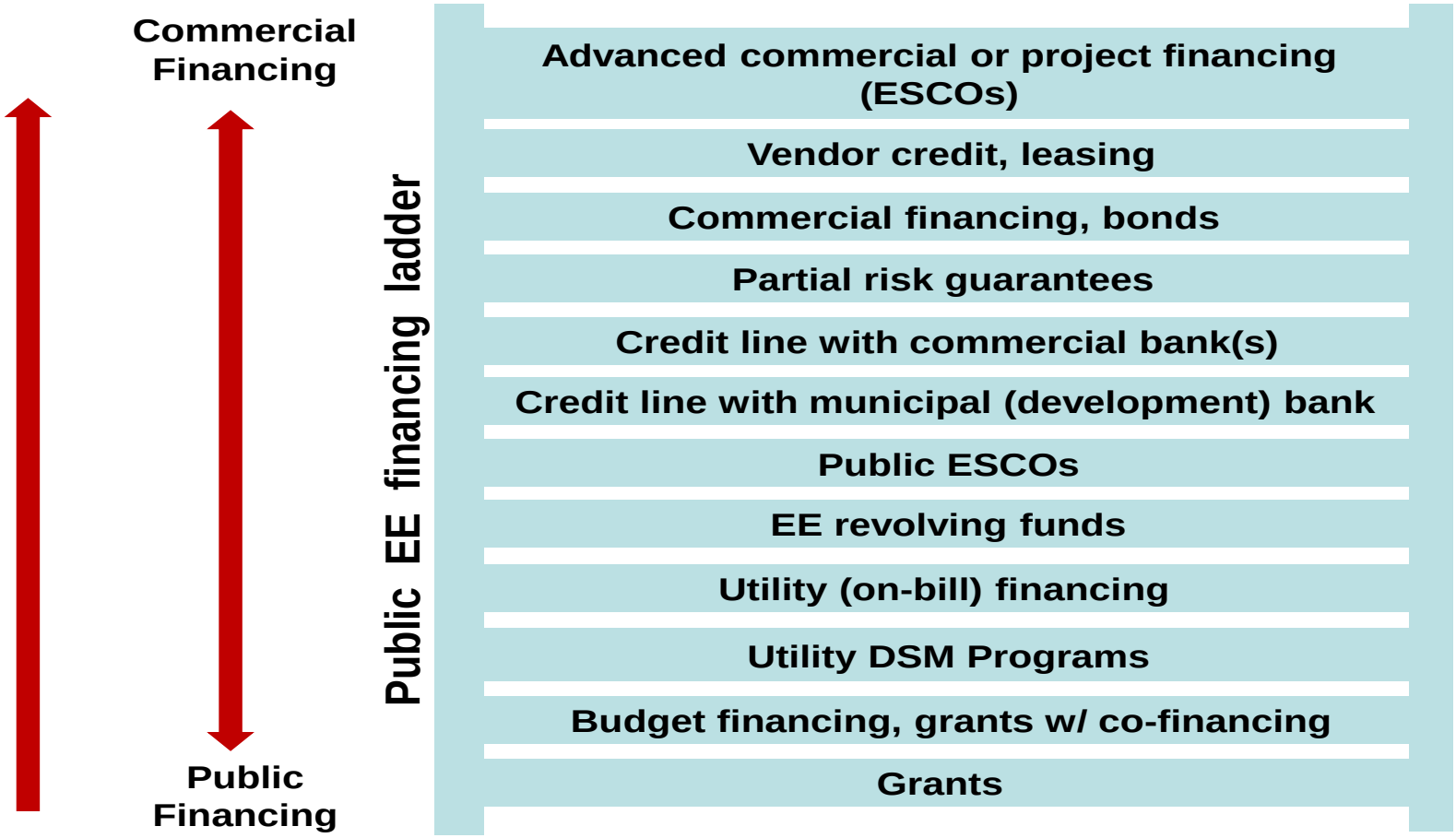
FINANCING SCHEMES FOR DSM INVESTMENTS

Financing Options for EE/RE Programs



Approaches to Credit Financing of DSM Projects

- **Direct Financing of the DSM Project**
- **Financing Micro Finance Institutions**
- **Financing DSM Project Preparatory Activities**
- **Financing for Credit Enhancement (Guarantee / Risk Sharing Mechanisms)**
- **Utility On-Bill Financing**

- Note: payment collection is facilitated by the fact that utility has an existing billing and collection system on which the financing scheme can dove tail

Approaches and Lessons Learned

- Discounted pricing for cash or installment payment
- Low interest subsidy for installment payment
- Interest free scheme for installment payment
- Full subsidy (e.g. free CFL Distribution)

Lessons Learned

- Should be supported with communication and promotional activities
- Should have enough resources for administrative costs of operating the funds (about 4-5%)
- High repayment rate of RE micro-financing
- Can leverage commercial financing

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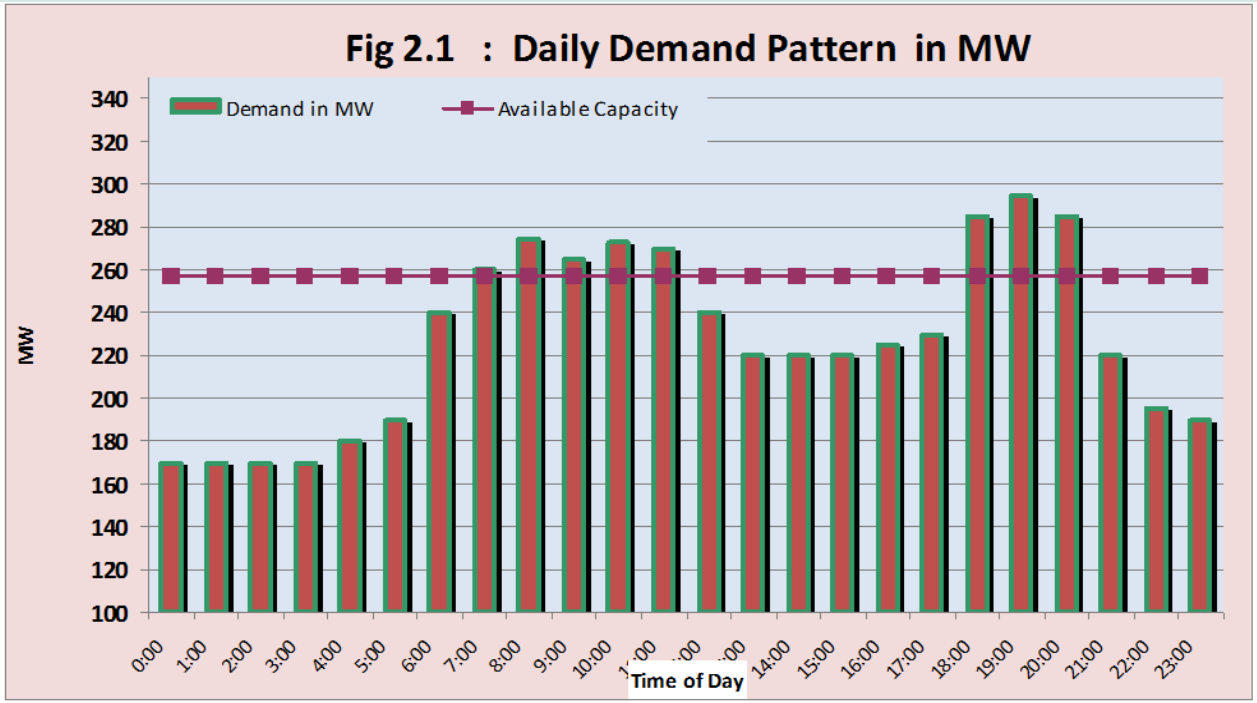
CASE STUDY OF UTILITY DRIVEN DSM IN A DEVELOPING COUNTRY

DSM Experience in Malawi

- 100% hydro based – Installed capacity of 285 MW (availably 255 MW)
- Peak Demand 334 MW ; generation 1,672 GWh
- Capacity shortage is 31%
- Electrification 7%
- Expect step load increase of 37MW/ yr over next 10 yrs

Future Supply Options

- Transmission line from Mozambique (negotiations stalled)
- No power plans in the pipeline

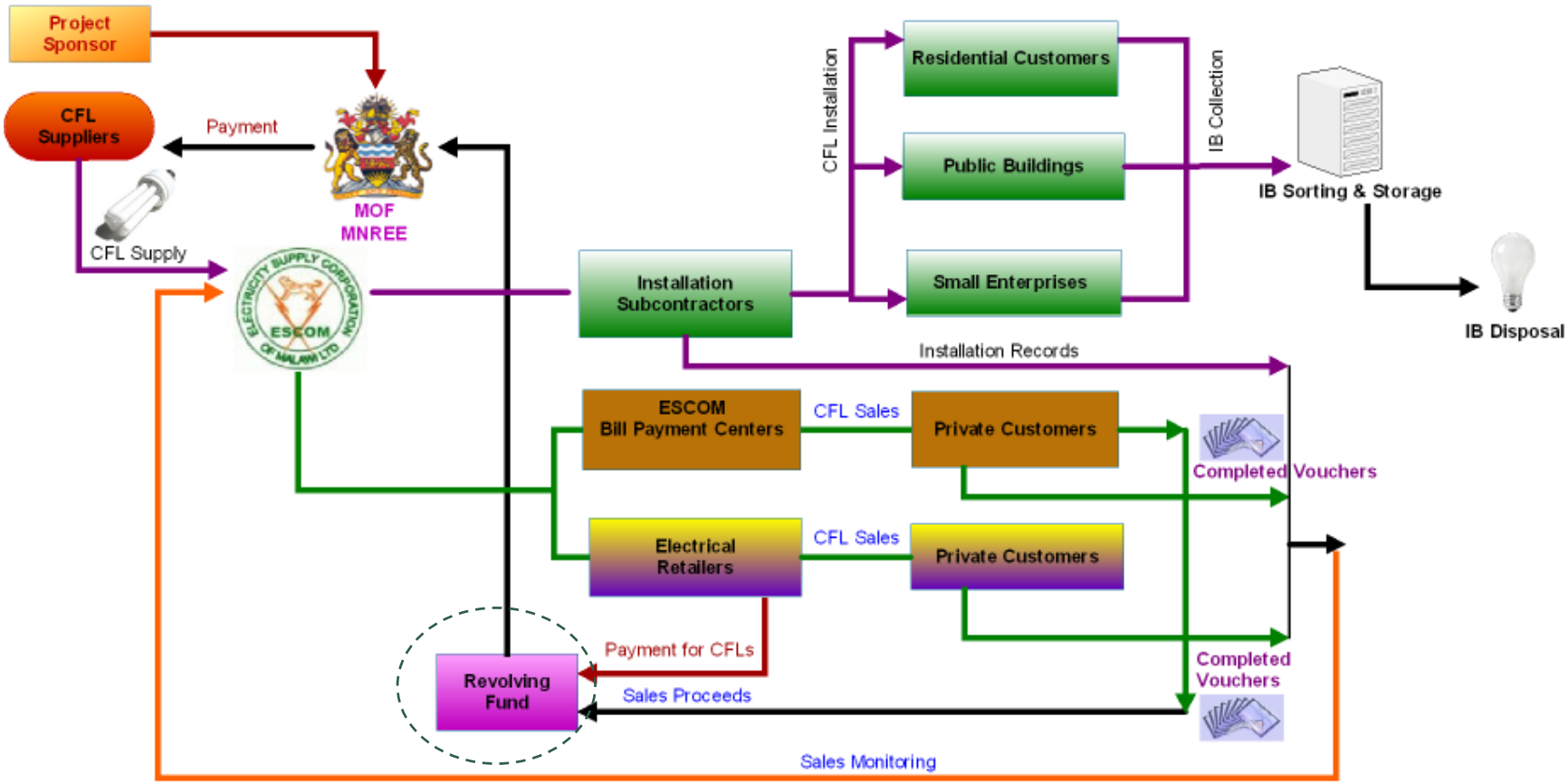


Malawi: Program Design Features

- Main Objective : Reduce evening and morning electricity demand (~ 50 MW)
- Distribution of 2 M High Quality CFLs
  - 65% free for residential sector and SMEs
  - 35% sold to large private enterprises (through retailers and utility collection center)
- Sustainability
  - Sales proceeds goes to a Revolving Fund for further DSM programs
  - Design of new DSM program for the Revolving Fund
    - Public Sector Buildings Lighting Retrofit Program
    - Solar Hot Water Program

Malawi: Implementation Procedure

Figure 5.1: CFL Program - Implementation Procedure

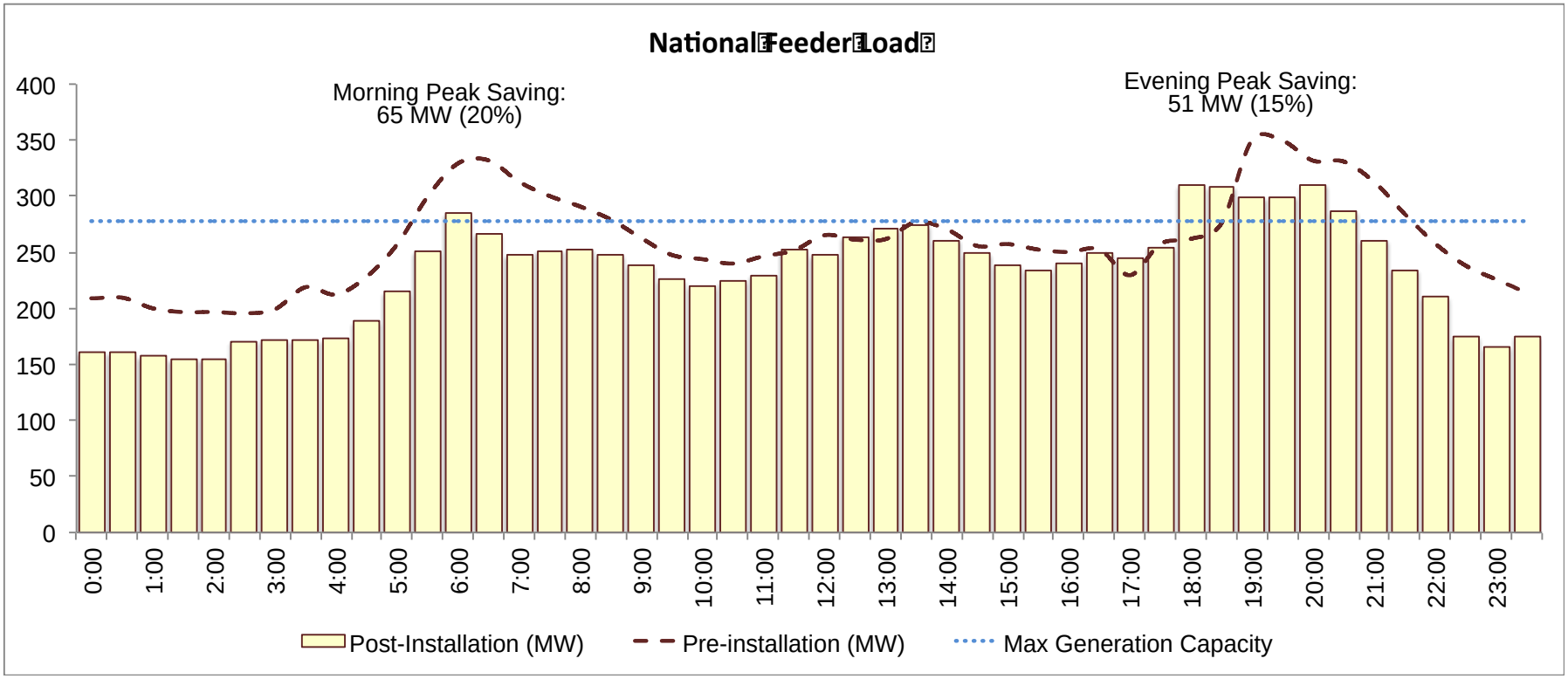


MOF - Ministry of Finance
MNREE - Ministry of Natural Resources, Energy and Environment
ESCOM - Electricity Supply Corporation of Malawi Limited

Malawi Experience in DSM

Project resulted in peak demand savings
65 MW 20% (morning) and 51 MW (15%) (evening). (Based on feeder measurements)

These reductions are expected to save as much as 62,611 MWh/year.



Malawi Experience in DSM

- Reduction in load of 51MW through efficient lighting programs costs $5M
- Took only 3 -4 months

- Establishment of a new 51MW power plant costs about $50M
- Will take about 5 years to build

DSM VS. RENEWABLE ENERGY

CFL

LED

SOLAR PV

DSM vs. Renewable Energy

Solar PV – 3,000 kW

- Install grid-connected PV
- Cost per kW – US$ 6,000
- Investment Cost – US$ 18 million
- Output - 1,600 hours per year
- Lifetime – 25 years
- Operational Cost ~ 3% -5% of investment cost
- Production – 5 M kWh/year

100,000 CFL lamps

- Bulk procurement & distribution
- Cost per lamp – US$ 2.50
- Investment Cost – US$ 250,000
- Peak Savings – 3,000 kW
- Lifetime - 10,000 hours
- Operational Cost ~ to utility
- Customer Savings – 6.5 M kWh

Efficient Lighting program can reduce the amount of investment needed in solar PV and facilitate meeting of national renewable energy targets

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THANK YOU