

# INDIA'S FIRST DISTRICT COOLING SYSTEM – GIFT CITY

**Presented by:**

*Mr. Rajeev Sharma, Vice President, GIFT CITY*



**Wednesday, 16th June 2021 | 17:30-19:00(India) | 20.00 - 21.30 (Manila)**



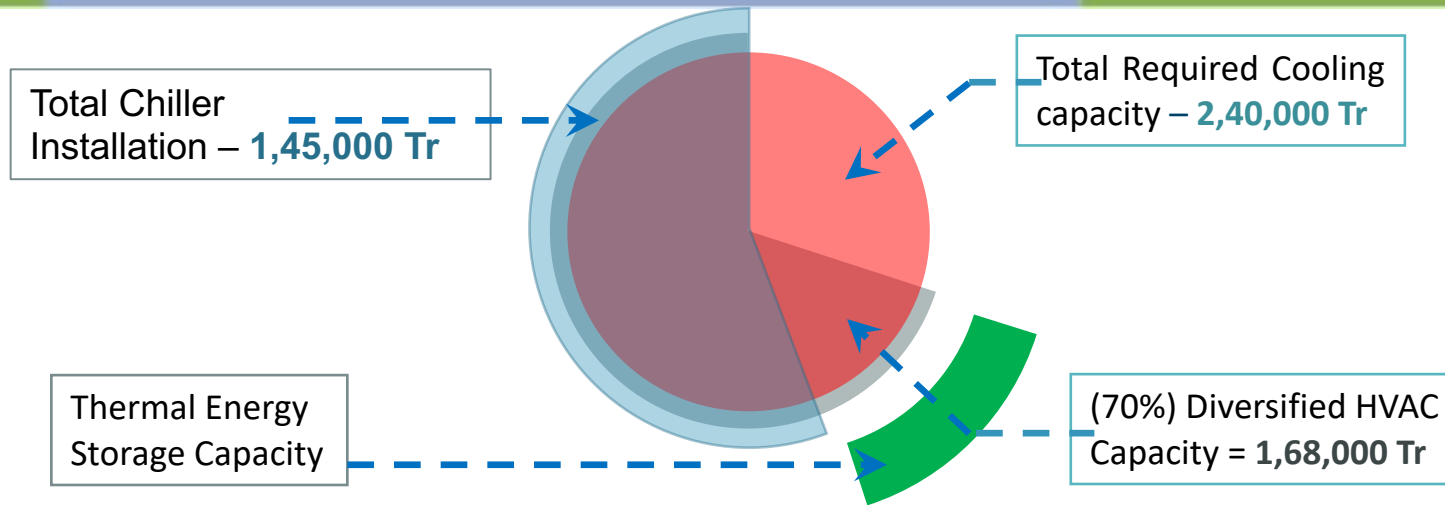
**@IndiaSmartGridF**



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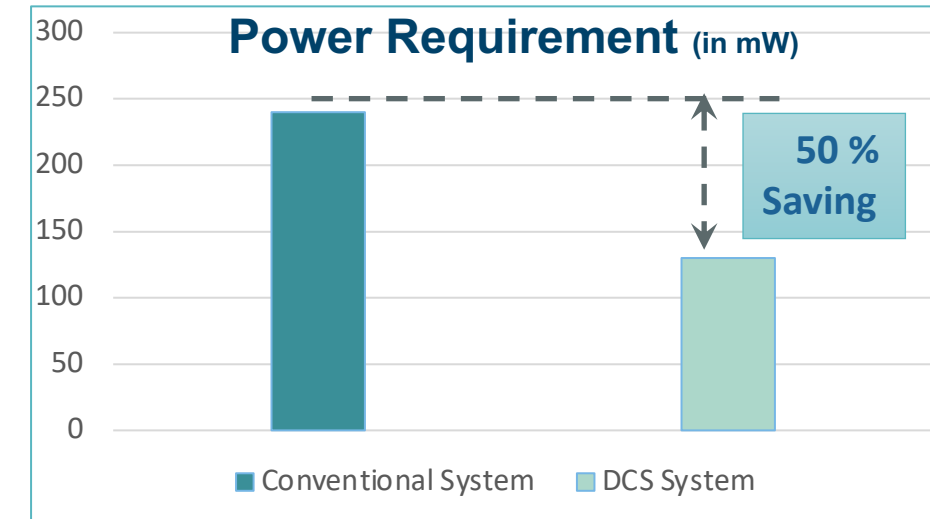
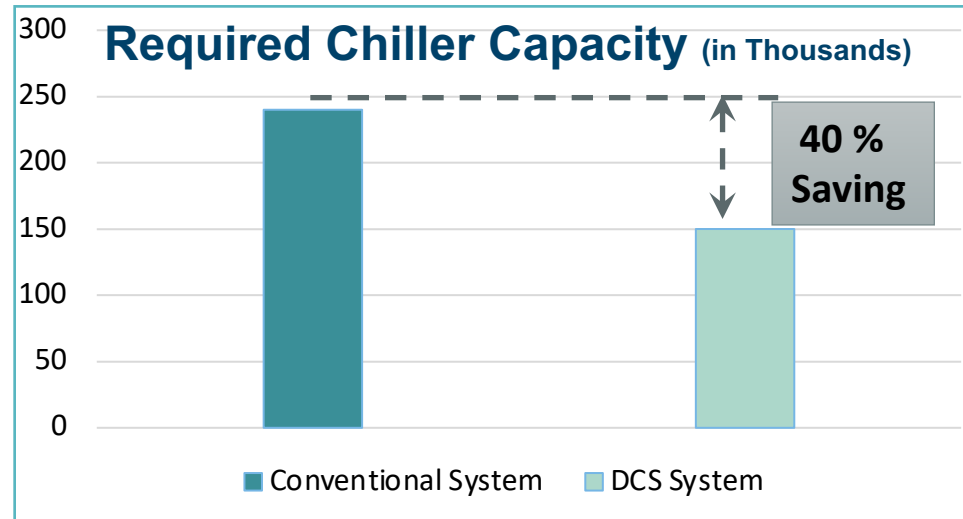
**India Smart Grid Forum**



**Total Built Up Area = 62 mn. Sq.ft.**

**Total Cooling Load Demand = 2,40,000 Tr**

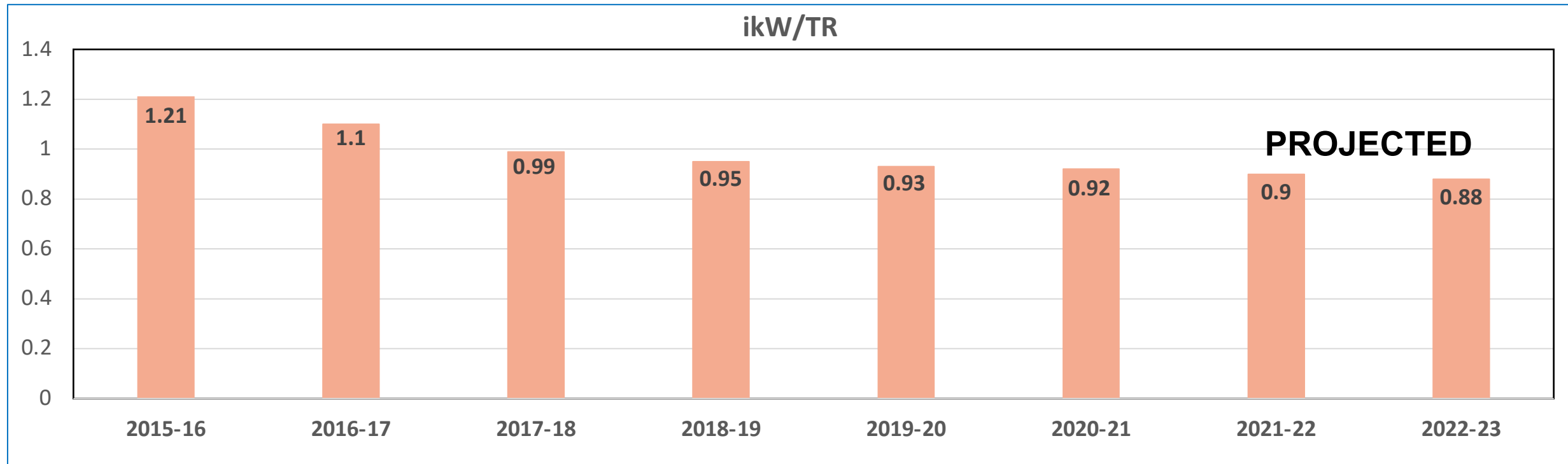
**30% CAPEX Reduction due to load Diversity**



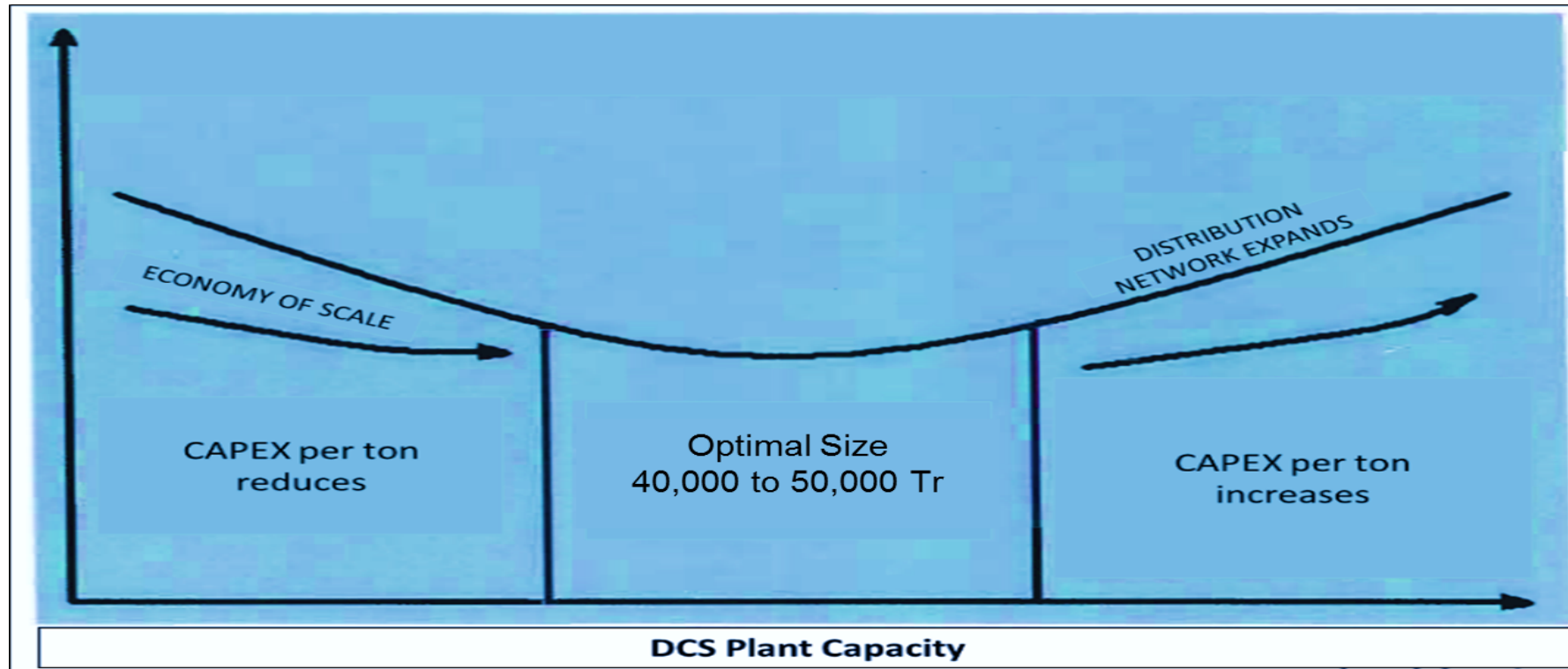
## 1. THERMAL STORAGE TANK ENGAGEMENT

a. Chillers operate at near Full Loads: Best IKW – Optimized Power use

b. Enables Night-time operation- Low O/Door temp: Better efficiency – Less Power reqd.



- DCS plant smaller than **30,000 Tr** are unable to take full advantage of economic of scale
- DCS Plant having capacity larger than **60,000 Tr** are over expensive and loose the DCS advantage.



## Business Model – Green Field – Hypothetical Example

Example – Case of setting up a DCS plant

Plant Size – 10,000 Tr ; Cost - Rs.100 Cr (13 mn. USD)

Considering: YoY Cooling load increase - **20%**

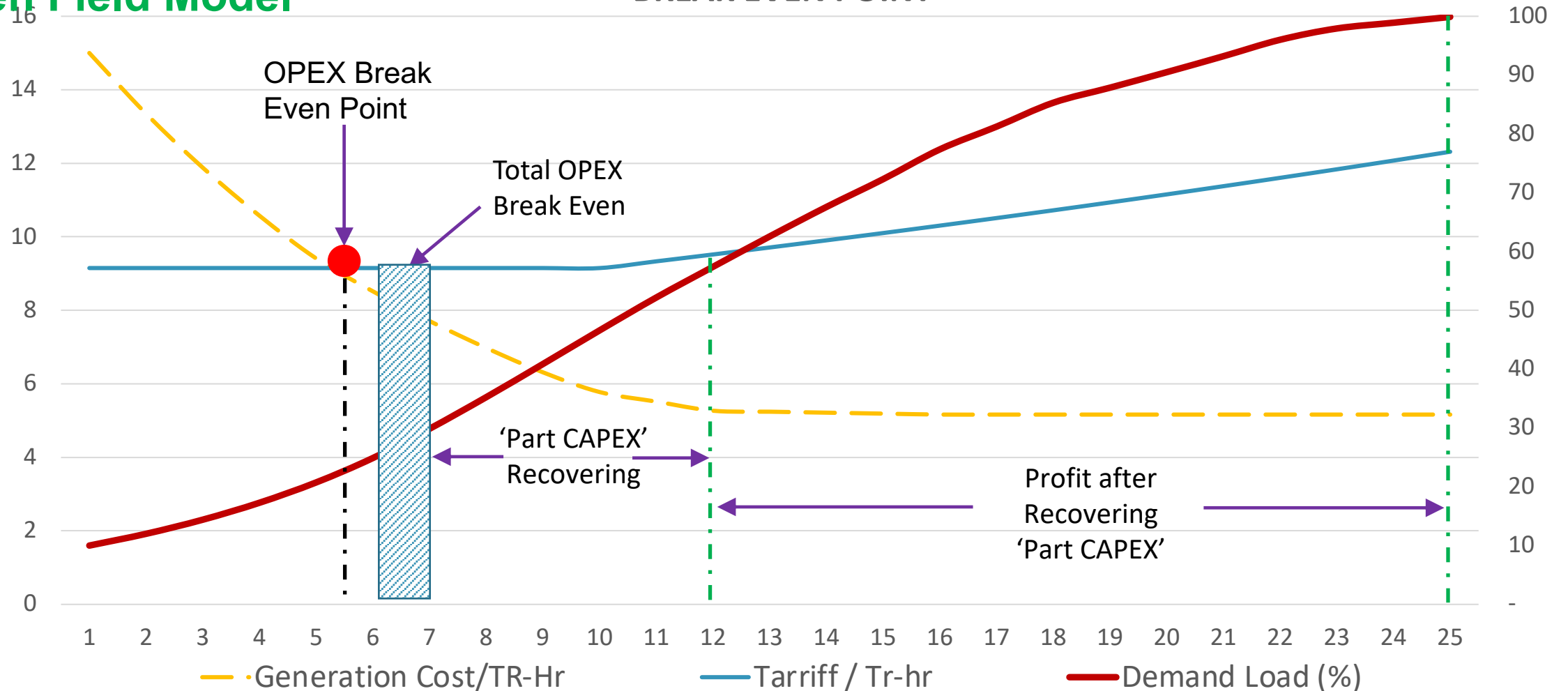
Tariff Increase : **2.5% yoy**

- B/ even - working OPEX : 5 – 6 Yrs
- B/ even - Total OPEX : 6 – 7 Yrs
- Part CAPEX Recovery : 10 - 12 Yrs
- Net Profit : 13 – 25 Yrs
- Profit – less cost of planned equipment replacement : 26 Yr onwards

- Part of Initial CAPEX deployed, to be recovered under City Development charges
- Fixed cost component goes to CAPEX recovery
- Tariff – 2 Stage: Fixed & Variable

## Green Field Model

## BREAK EVEN POINT





## Business Model – Retrofit – Hypothetical Example

Example – Case of setting up a DCS plant

Plant Size – 10,000 Tr ; Cost - Rs.100 Cr

Considering: Upfront load availability: **40%**

YoY Cooling load increase: **15-20%**

Tariff increase – **2.5% YoY**

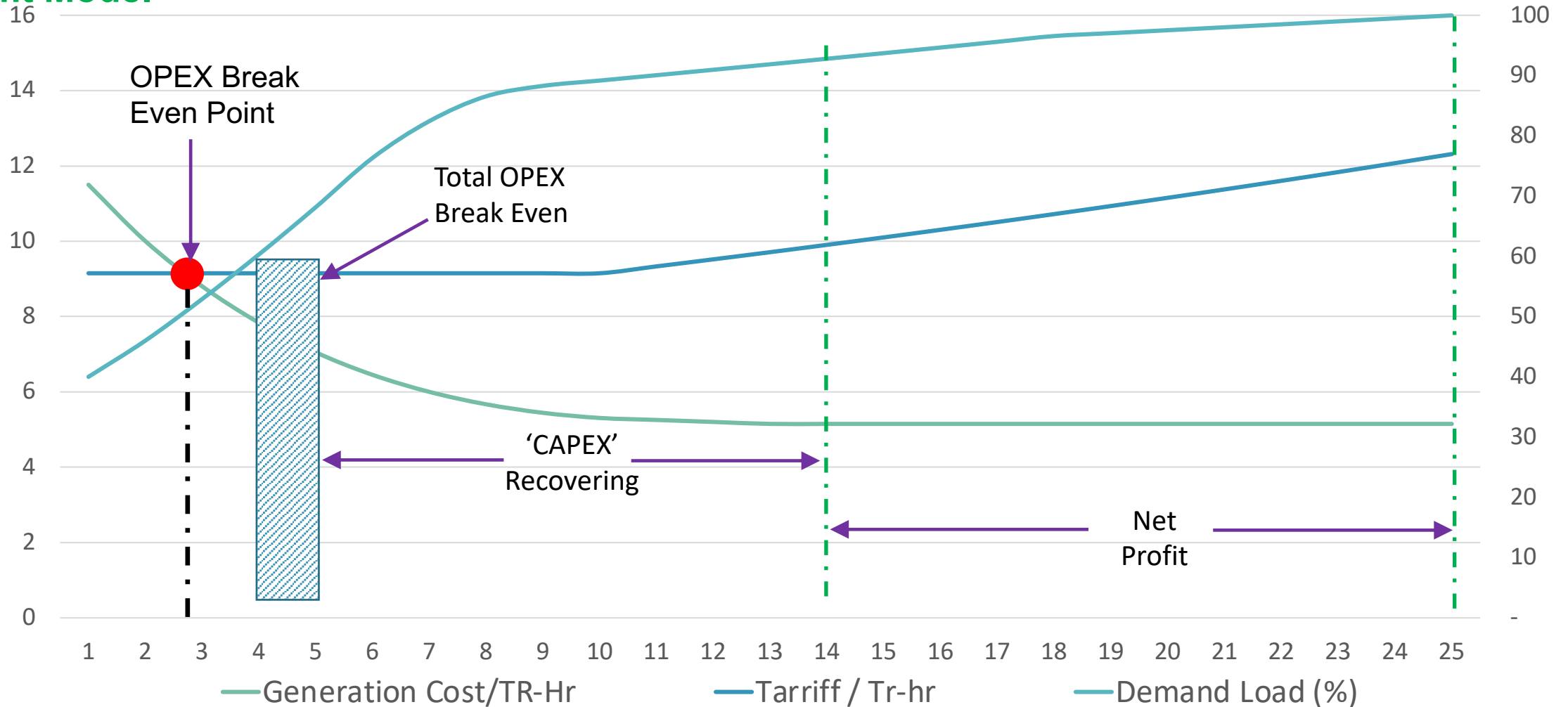
- B/ even - working OPEX : 2 – 3 Yrs
- B/ even - Total OPEX : 4 – 5 Yrs
- Total CAPEX Recovery : 14 – 15 Yrs
- Net Profit : 15 Yrs onwards
- Profit – less cost of planned equipment Replacement : 26 Yr onwards

### Note:

- CAPEX deployed, to be recovered through tariff and demand Contracts
- Tariff – 2 Stage: Fixed & Variable

## Retrofit Model

## BREAK EVEN POINT





## Business Model – Key Points For Attention - Green Field

- Technical Feasibility - Technology selection
- Availability of Space / Location for Utility & Piping network corridor
- Preparation of Overall plan & Guidelines - DCS supply and Usage
- Cooling Demand Estimates
- Availability of Power, water, sewage source, other Utility interconnect
- Initial Funding source & recovery of interest and capital
- Tariff Structure, Metering & Regulatory body
- Break even - CAPEX & OPEX
- ROI / IRR

## Policy

1. Regulatory framework for tariff determination
2. Availability of Power on subsidized model for DCS to connect to residential building.
3. Govt. to give Building developers TAX exemptions/benefits to encourage connecting to DCS.
4. DCS investors to be encouraged by Govt. for special benefits in Power Purchase Agreement, establishing Solar power plant and non-conventional energy use.

# Thank You

*Suggestions are Welcome...*

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