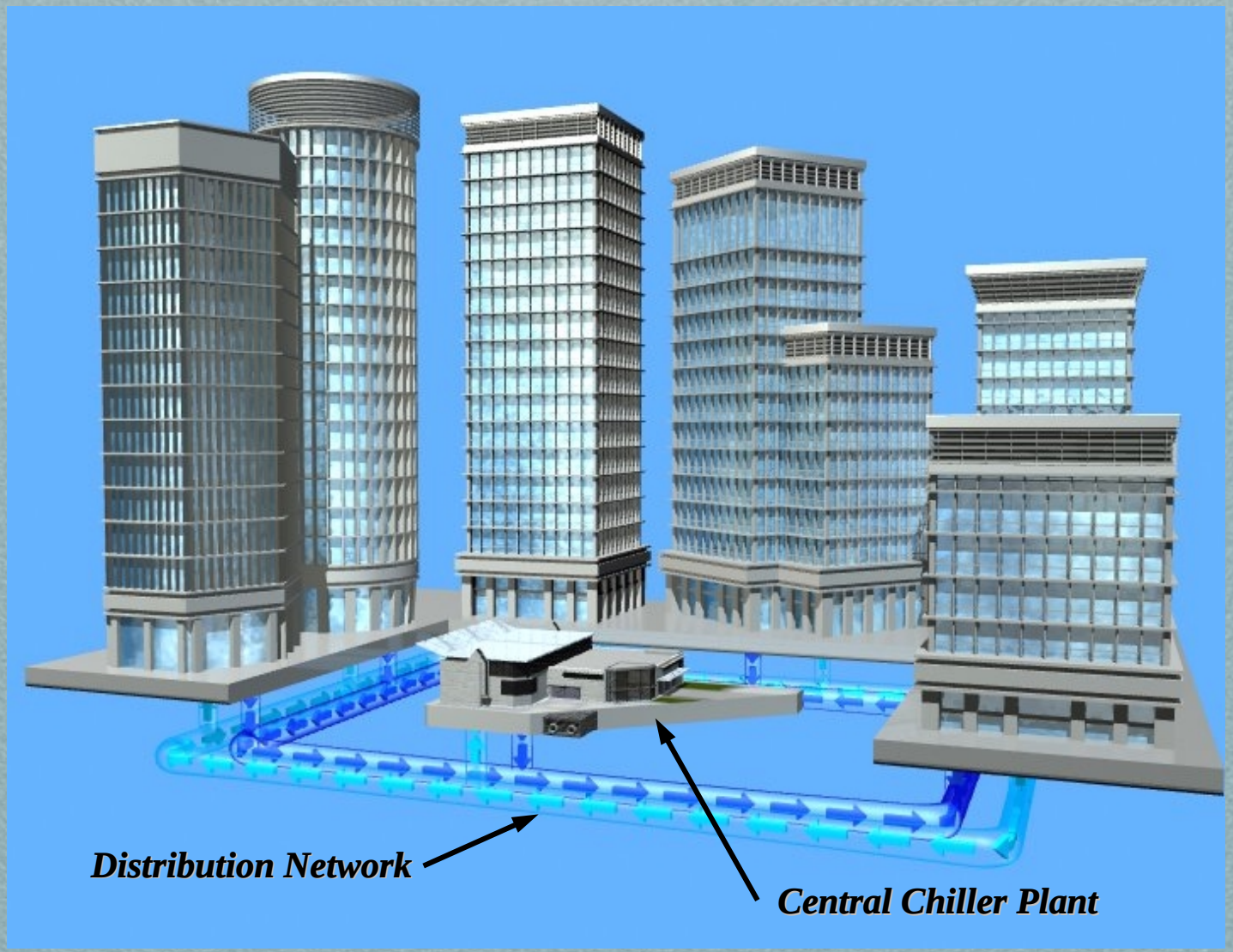
Contents of the Presentation

- Background of DCS in SEKD
- Key Findings of DCS Study
  - DCS Design
  - Financial Issues & Institutional Arrangements
  - Way Forward

Background of DCS in SEKD

- To improve our environment and conserve energy, the Electrical and Mechanical Services Department commissioned a consultancy study in Jan 2001.
  - To examine how to implement a district cooling system at South East Kowloon Development (SEKD)

What is DCS



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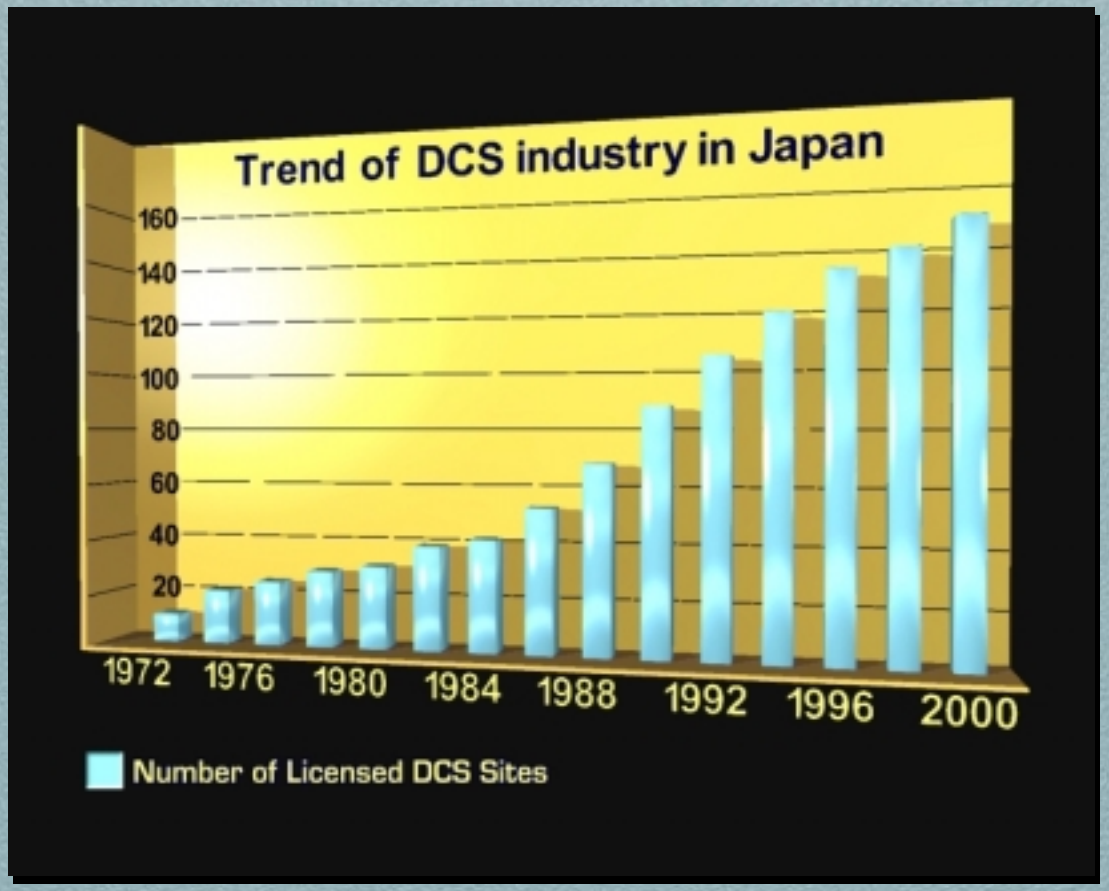
History of DCS



- **The technology has been proven viable in the United States, Europe, Japan and other Asian countries such as Malaysia and Singapore.**

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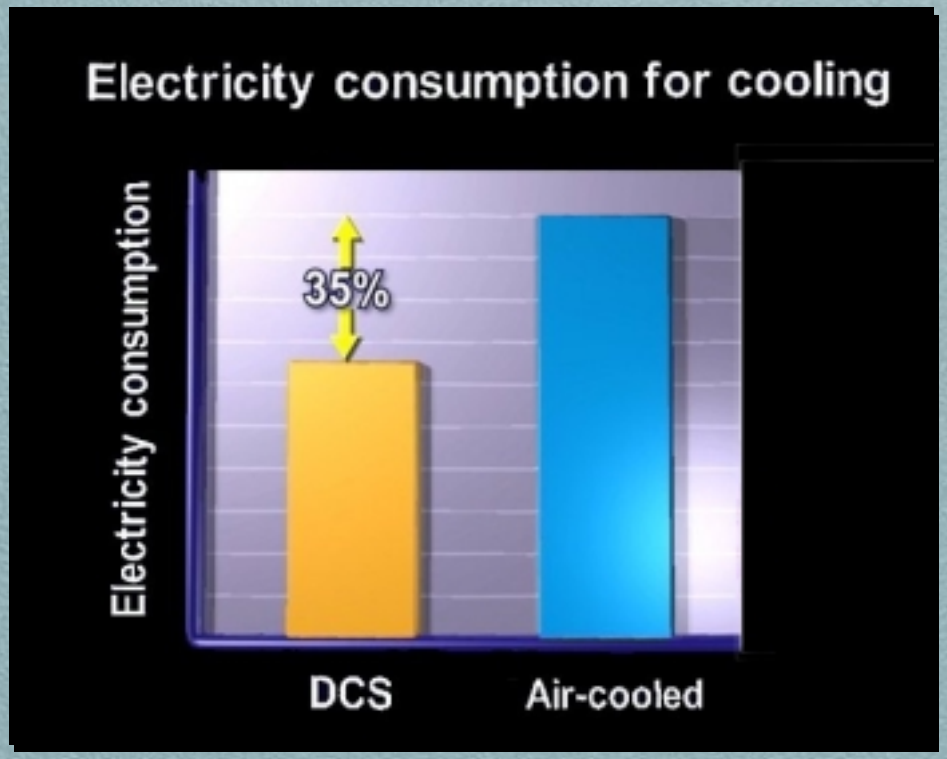
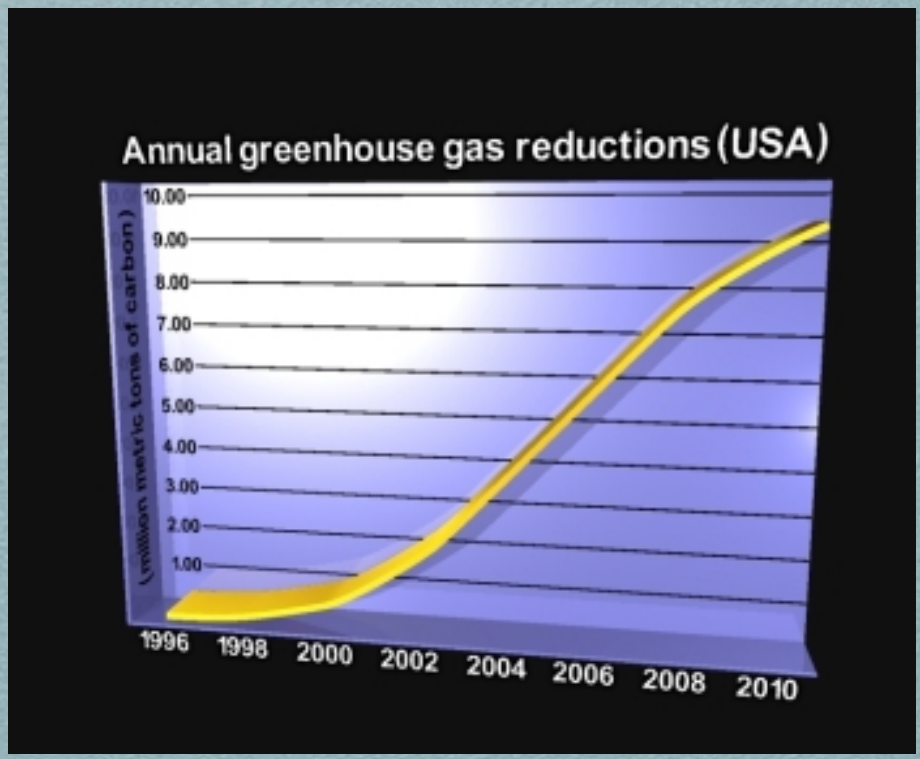
Benefits of DCS

Energy saving



- Energy saving up to 35% as compared with conventional air-cooled

Environmentally Friendly



- Eliminate noise, vibration, thermal plume and other environmental problems

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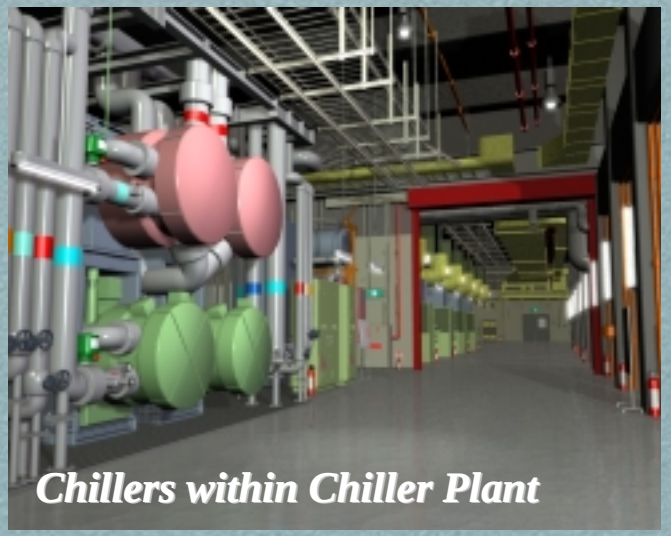
Benefits of DCS (cont'd)

Architectural Benefits

- **Buildings' rooftops may be converted to recreational facilities and sky gardens.**

Benefits of DCS (cont'd)

- Reliability and Quality
- Space Saving
- Design flexibility to meet future demand for cooling services
- Save capital investment
- Save maintenance and operating costs



Chillers within Chiller Plant

DCS Design

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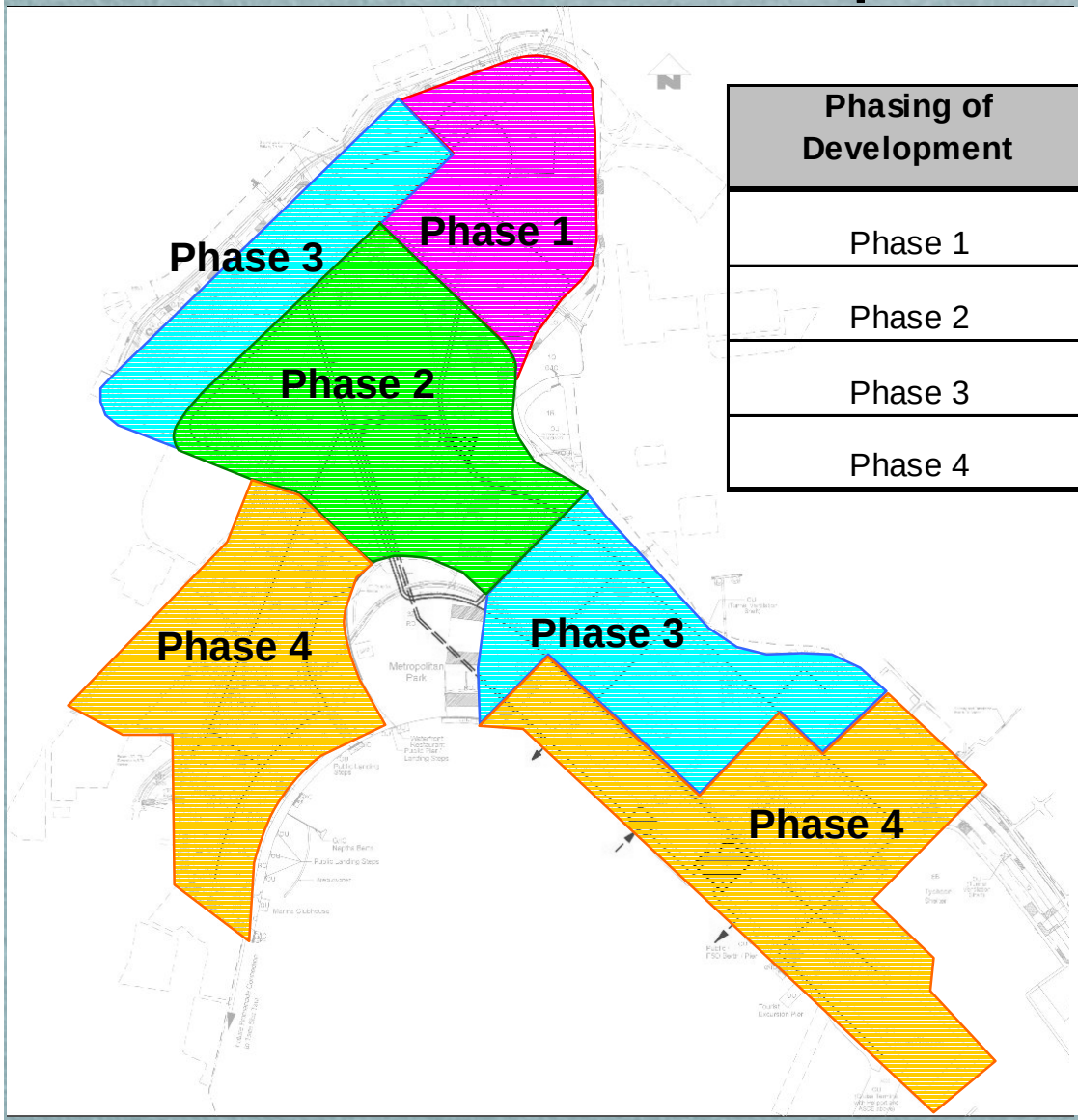
Phases of development of SEKD

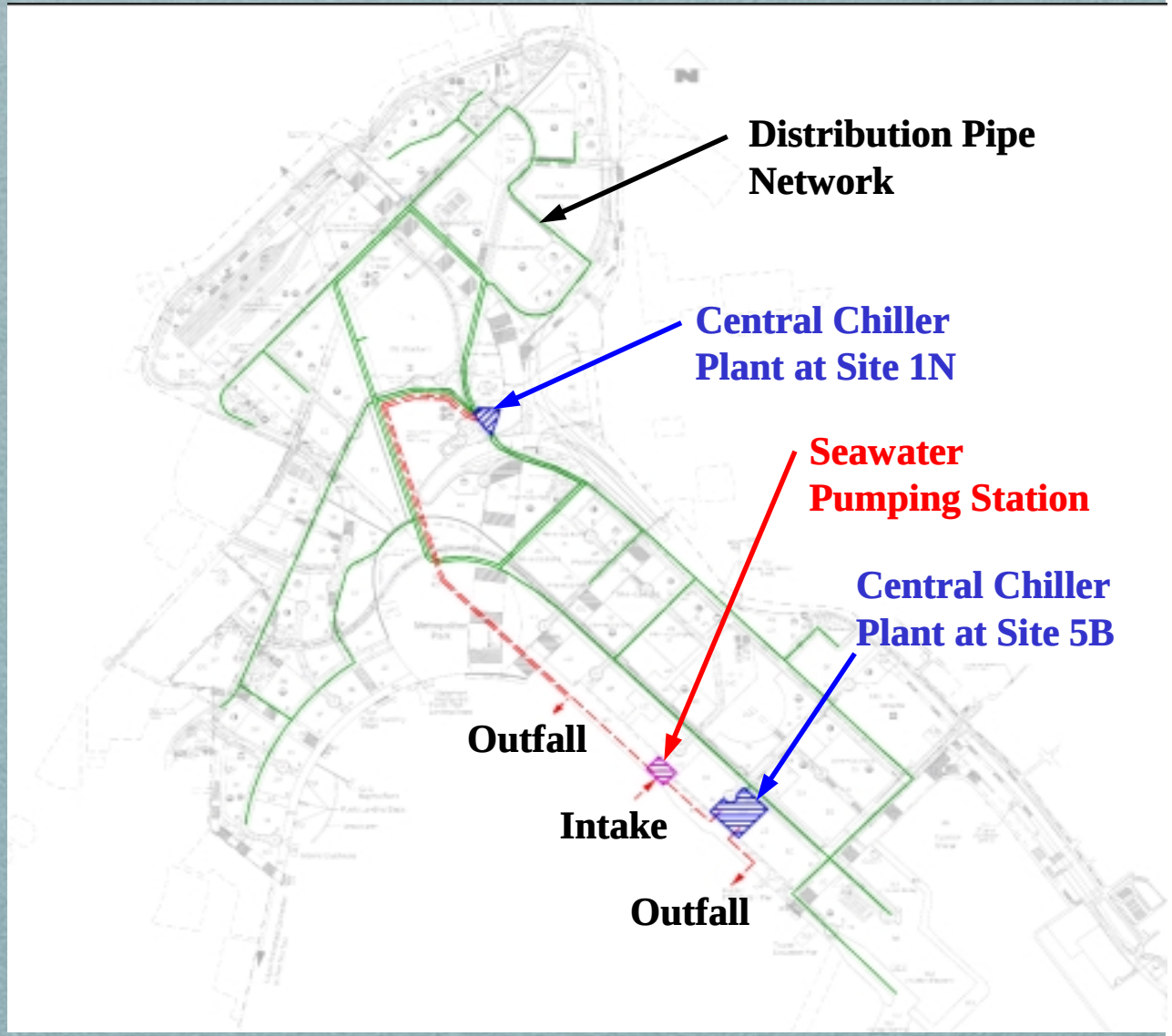


Phasing of Development	Expected Year of Population Intake	Cumulative Cooling Demand (MW)
Phase 1	2005	11
Phase 2	2006 - 2009	36
Phase 3	2010 - 2014	132
Phase 4	2015 - 2018	196

Phase 1
Phase 2
Phase 3
Phase 4

DCS Layout

- Seawater Pumping Station
- Central Chiller Plants at Site 1N and 5B
- Distribution Pipe Network



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Energy Efficiency

- **Comparison with traditional air cooled air-conditioning system**
  - 19% energy saving (cooling tower)
  - 24% energy saving (condenser cooling - CPSSCC)
  - 35% energy saving (DCS)

Preliminary Environmental Review

- **No adverse impacts are expected for Noise, Air, and Water Issues**

Operational Risk Assessment

- **Assessed to be more reliable than the standalone air-conditioning system**

Financial Issues & Institutional Arrangements

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Financial Issues

NPV=$ 64 million for a contract period of 30 years, based on

- **100% GIC (under Government Control) + 70% GIC (not under direct control of Government) + 50% Private Commercial Development**
- **SEKD programme at the time of the Study**
- **Customer charges at a comparable tariff**
- **Government to resume the ownership by paying DCS operator a residual value of the assets**
- **No land costs**

* *GIC - Government Institution or Community*

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Financial Viability

- **DCS serving commercial and government buildings is a viable investment but is sensitive to the following factors:**
  - Demand revenue
  - Land Costs
  - Changes in the development programme and development mix of SEKD

Sensitivity of Customer Uptake and Land Costs on NPV

Customer Uptake Scenarios			Project NPV (assumed no land costs)	Project NPV (assumed land costs)
GIC (Under Govt. Control)	GIC (Not Under Direct Control of Govt)	Private Commercial Development		
100% (20%)	100% (33%)	100% (47%)	298M	107M
100%	100%	50%	145M	-47M
100%	70%	50%	64M	-127M
0%	70%	50%	-160M	-352M

Note: Value in bracket indicates the percentage of total cooling demand

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Recommendations:

- **100% GIC uptake (under Government control)**
- **Waive land cost**

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Land Issues

Land for DCS Chiller Plants & Pumphouse

- **Land allocation + licence approach**
  - Administratively simple and quick
  - Licencing approach has working precedent
  - No land premium required

Land Issues (cont'd)

Land for DCS Pipe Network

- **Land licence approach**
  - Land (Miscellaneous Provisions) Ordinance, Cap 28
    - Category of either "Water Supply" or " Utility"
    - Block licence
    - Low / no licence fee
    - Policy approval required

Contract Strategy

- **Public Private Participation (PPP)**
  - **Build, Operate and Transfer (BOT)**
    - Minimizes public spending
    - Maximizes private sector involvement
    - Assumes best allocation of project risks
    - Increases efficiency and encourages innovation
    - Requires single open tendering process

Legal Issues

- No amendment to existing legislation
- No new legislation
- **Essential Components can be delivered via BOT contract without new legislation**
  - Land: SEKD is a “Greenfield” site, with no private development currently there
  - Design/construction/installation
  - Operation and Maintenance
  - Financing and tariff
  - Off-take Agreements

Way Forward

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Critical Steps to take forward the project

- **Completion of Study**
- **Consideration by Government**
- **Consultation with LegCo/advisory bodies**
- **If Government decides to proceed with the project:**
  - Draw up implementation timetable
  - Conduct Expression of Interest
  - Invite Tenders and select DCS operator
  - Design/construction/operation

Possible Timetable after Policy Approval

- Expression of Interest — 5 months
- Tender & Selection of DCS Operator — 8 months
- Design and Construction — 24 months

Total: 37 months

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