

A presentation from the 2009 Topical Symposium:

Energy Security: A Global Challenge

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INSS



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Promising Programs for Energy Efficiency



The Pentagon – A Small City

Pentagon Reservation:

583 acres

Pentagon Bldg: 34 acres

Parking Space: 67 acres

6.5 million sq. ft.

3 Empire State Bldgs.

7,748 windows

17.5 miles of corridors

25,000 personnel

1 million calls each day

Police force

Metro station

Fire station

Health facilities

Post Office

Mini-mall

Heliport



Features



Building Operations Command Center (BOCC)



York Chillers – Refrigeration Plant
(Ten, 3,750-ton chillers)

Pentagon Building Operations Command Center



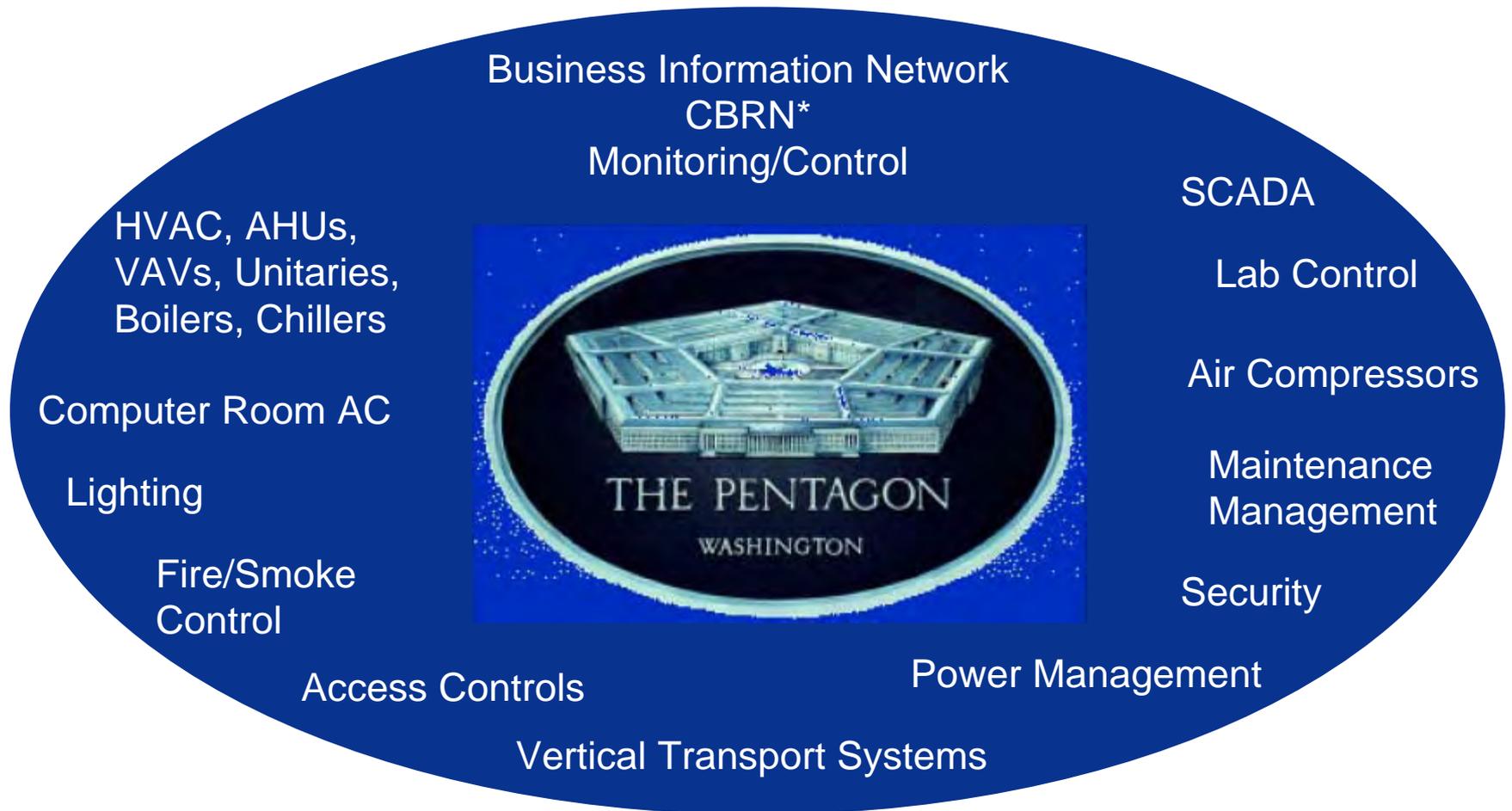
Johnson Controls furnished and installed on a turn key basis:

- 2,400 sq. ft. BOCC Shell
- Interior Design/Build
- Plumbing, HVAC, Electrical, Lighting, Equipment Consoles, Furniture, Wall Coverings



- Four large screen displays (100" projection)
- Raised floor to accommodate IT infrastructure and heating/cooling loads

Pentagon BOCC Integrated Systems



*CBRN – Chemical, Biological, Radiological, Nuclear



Twenty-nine Palms Marine Air Ground Task Force Training Command

Twentynine Palms ESPC

Utility Problems on Base

- Located at the end of electrical distribution
- Frequent power disruptions
- High cost of electricity

Needs

- Increase electrical power reliability and self-sufficiency
- Reduce the need to purchase electricity from outside sources
- Improve living conditions on base
- Meet federal orders to reduce energy consumption and utilize renewable energy sources

Twentynine Palms ESPC

Solution: Energy Savings Performance Contract

- Energy Management System and lighting retrofits
- Three new central chiller plants (upgrades to five existing chiller plants)
- A cogeneration plant – 7 megawatt / dual fuel
- An eight-acre photovoltaic farm

\$67 million in private sector investment

- \$4.5 million utility rebate

ESPC - Energy Savings Performance Contracting

Before ESPC

- Federal funds are wasted on utility costs

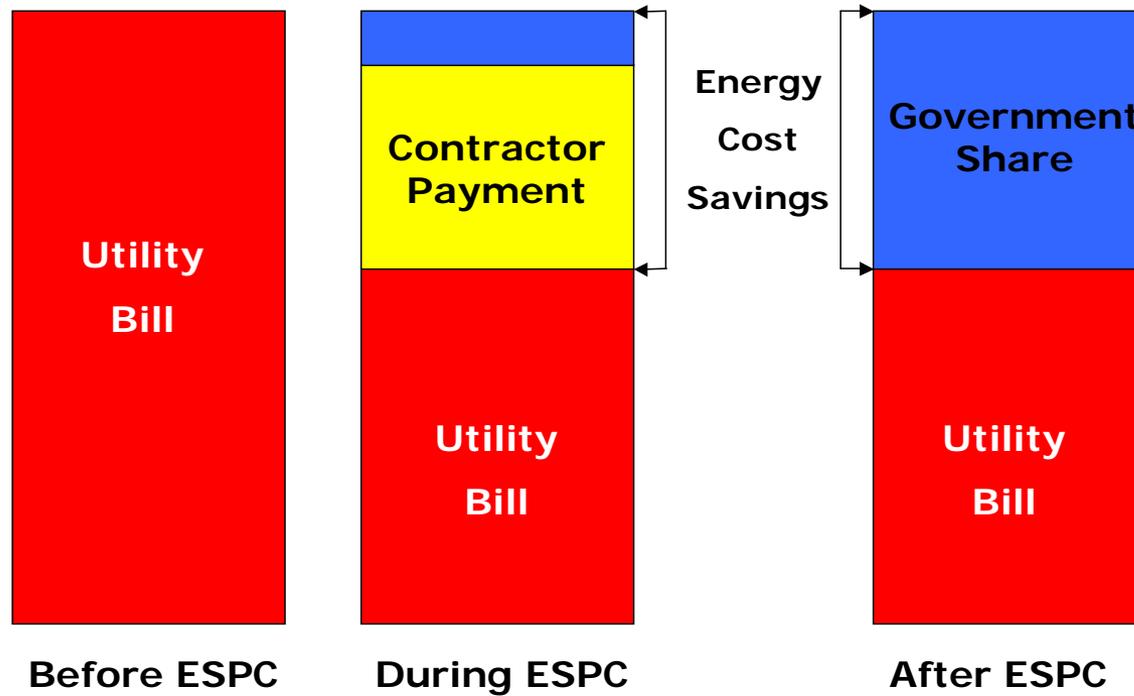
During ESPC

- Energy service companies finance, install and maintain new energy efficient equipment, *at no upfront cost to government*
- Private sector investment paid off with utility \$avings
- Results are guaranteed – government pays no more than it would have paid for utilities before ESPC

After ESPC

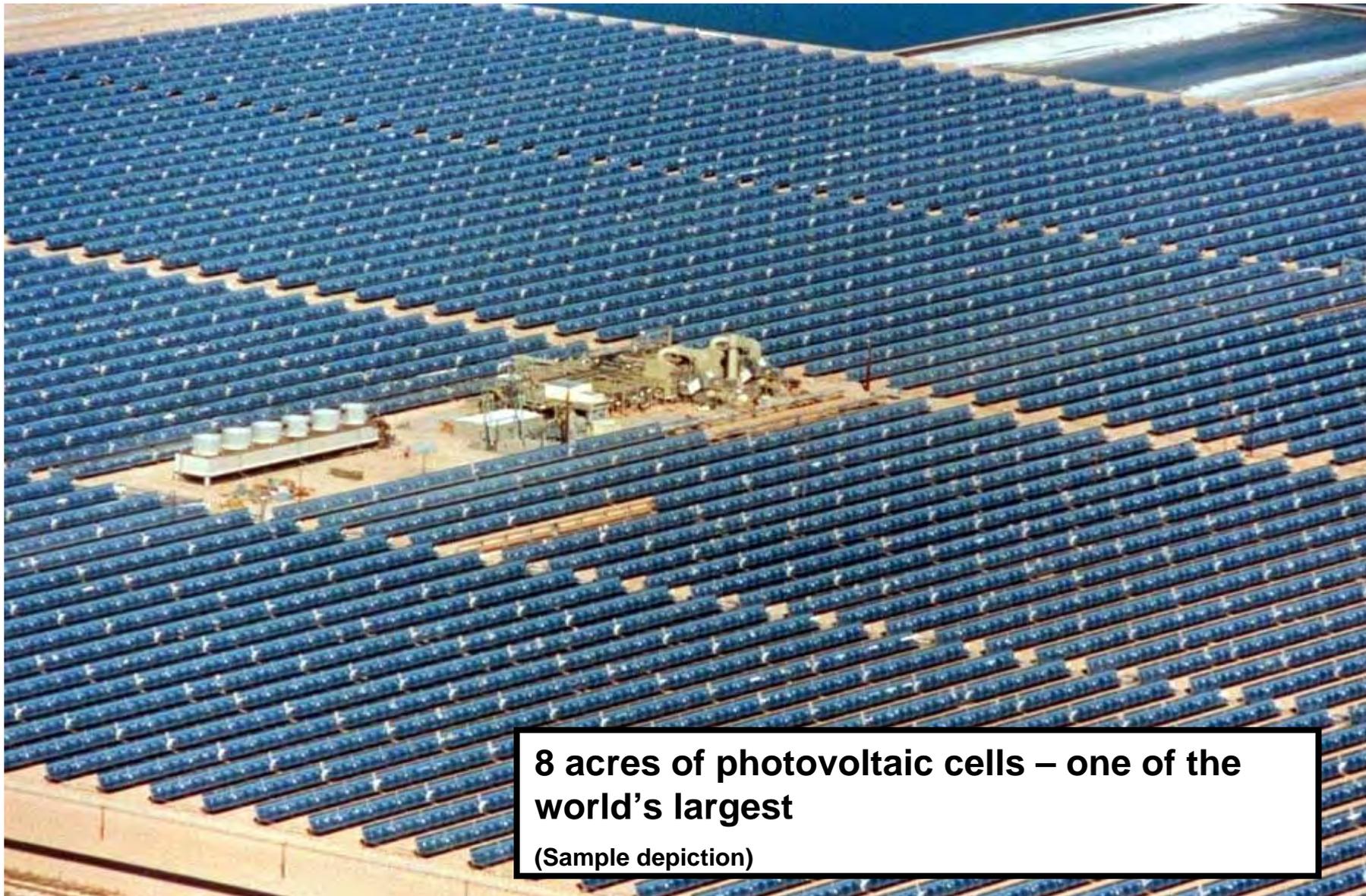
- Government keeps all the savings after investment is paid off

ESPC - Energy Savings Performance Contracting





Construction of cogeneration plant in the Mojave desert



8 acres of photovoltaic cells – one of the world's largest

(Sample depiction)

Benefits to Twentynine Palms

- Energy Independence from Grid
 - Up to 6 days for critical loads
 - Increased Power Quality
- Quality of Life Improvements
 - Air Conditioning improvements in Barracks
 - Improved working conditions through HVAC upgrades
- Reduced Costs
 - Energy Savings and Utility Maintenance
 - Future MilCon – New buildings will tie into central plants rather than build their own systems
- Secure underground utility tunnels
- Reduced Emissions