



The Solutions Network

Rochester, New York

Strategic Energy Planning 29 Palms ESPC Projects

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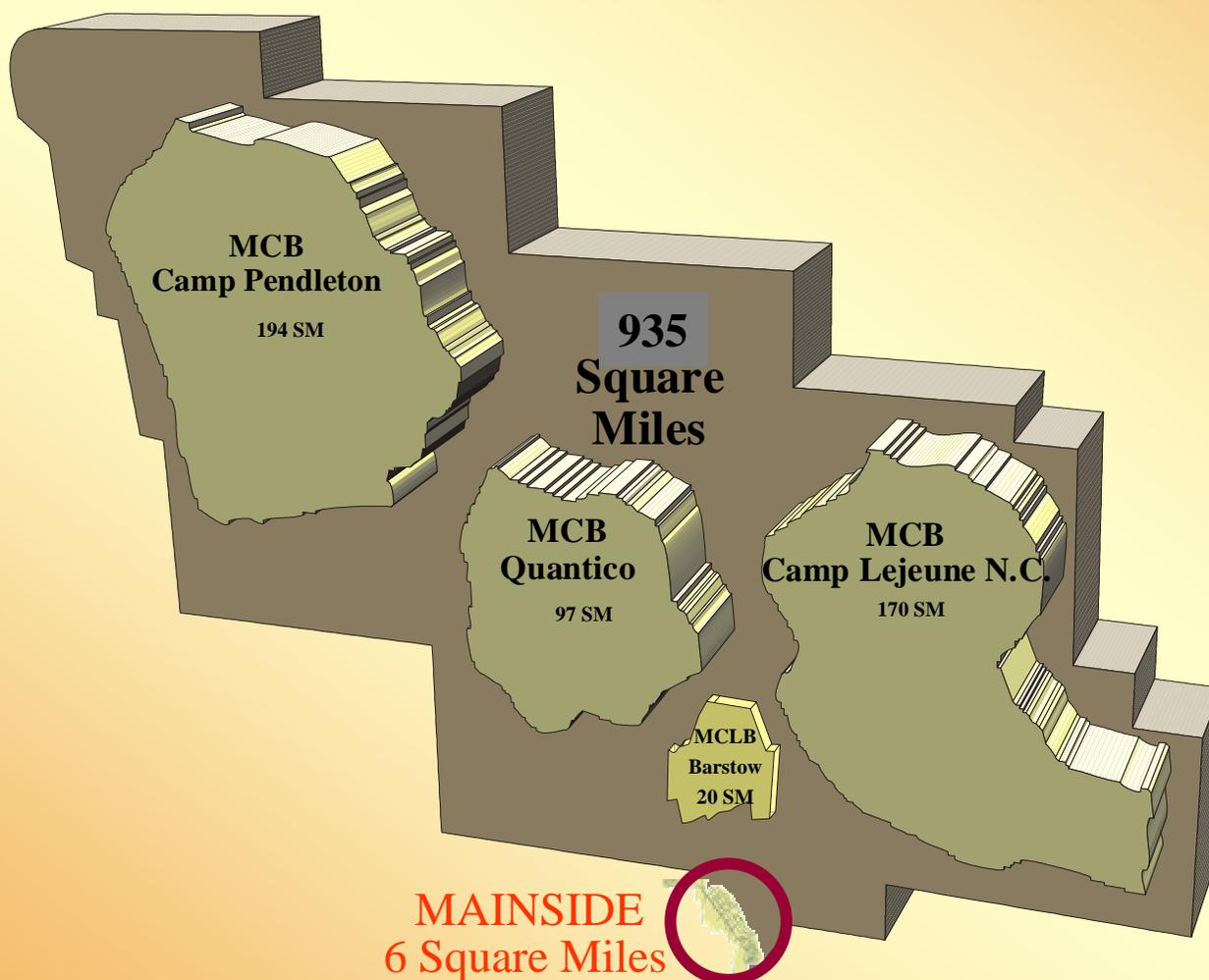
Johnson Controls Inc.

Strategic Energy Planning

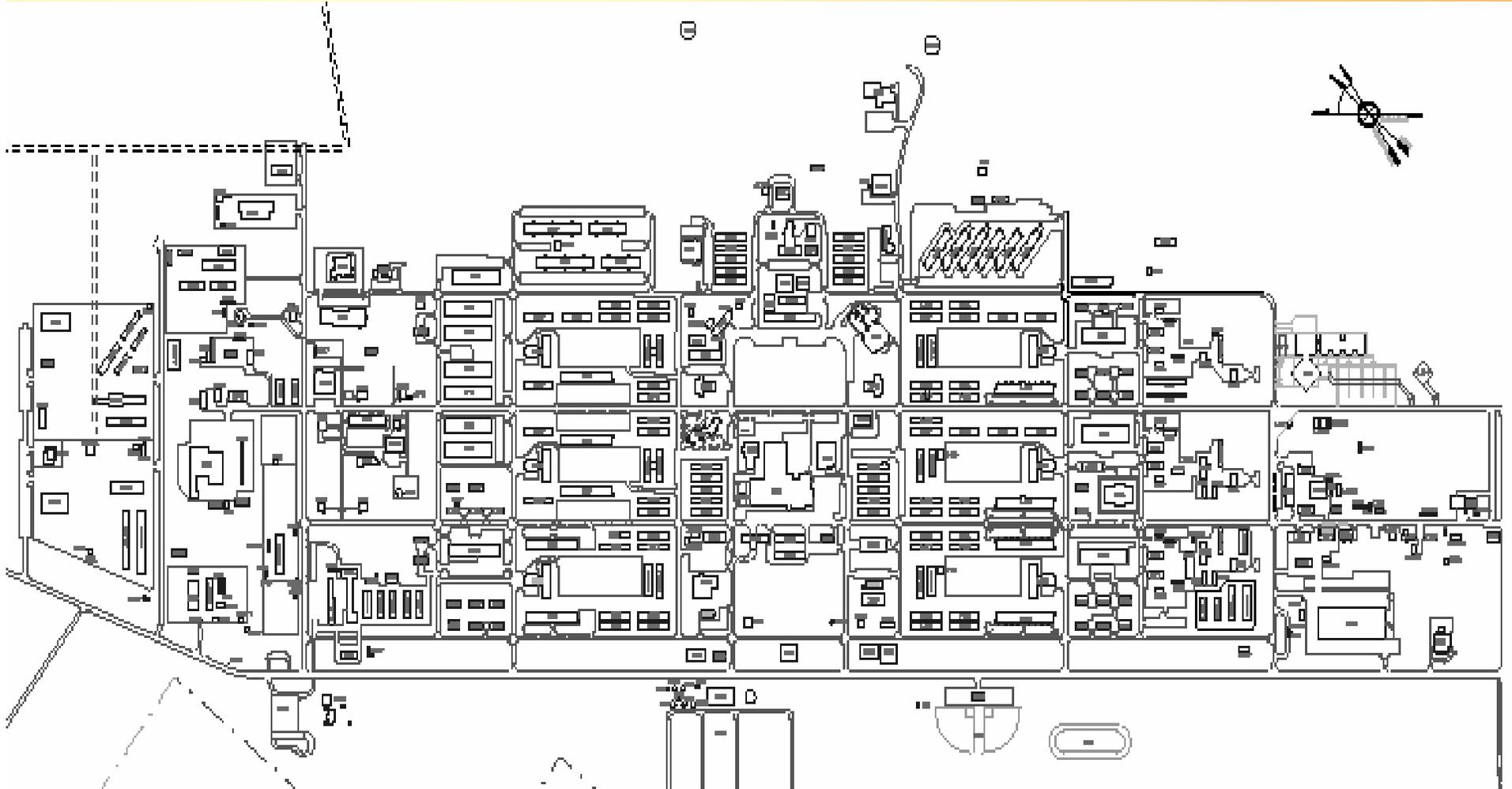


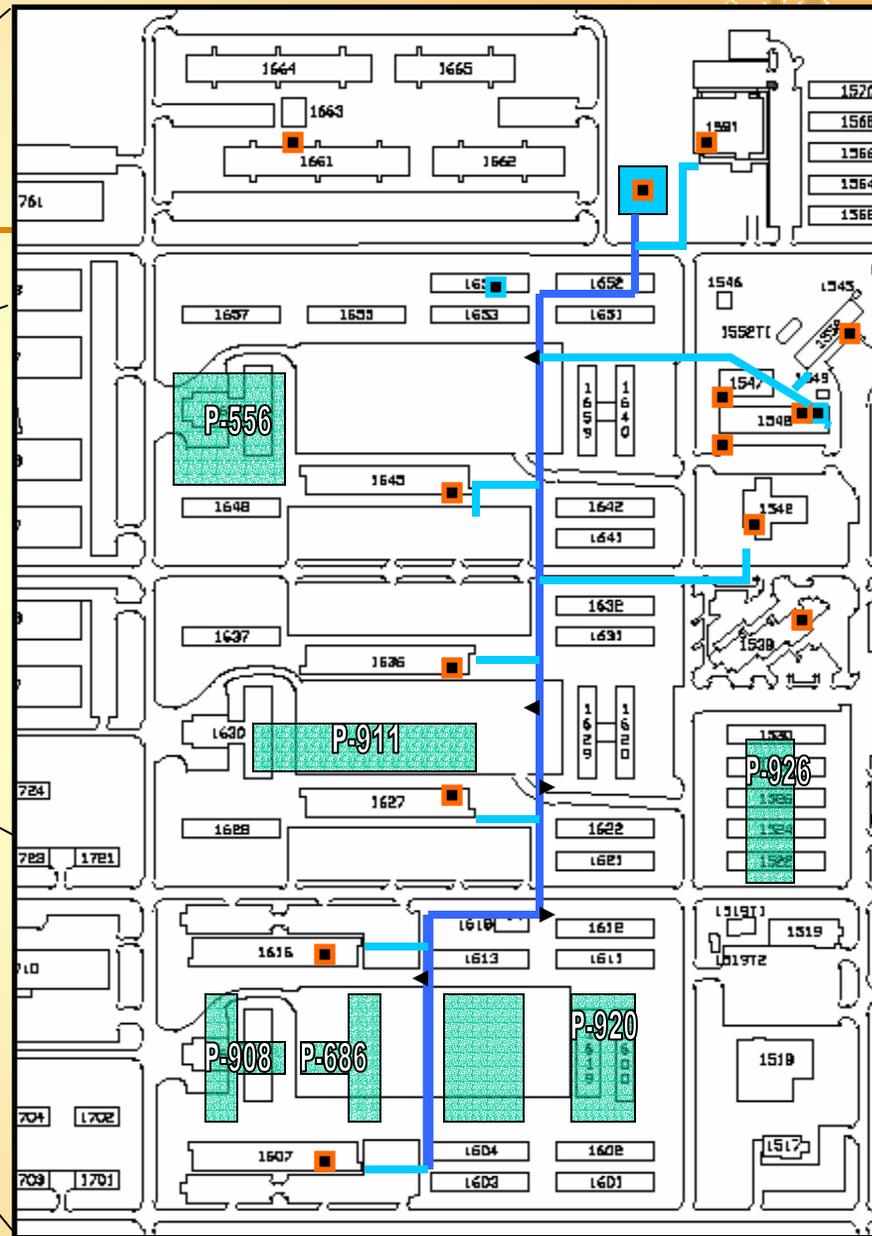
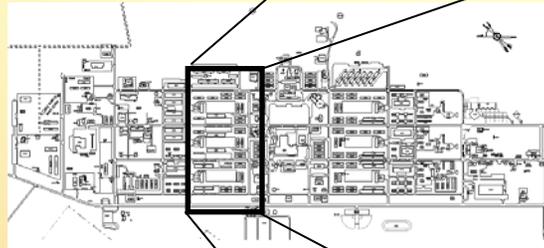
- Overview perspective
 - Drivers for reductions
- Goals
 - Realistic attainable without sacrificing mission
- Outline initial strategy
 - Energy purchase agreements
 - Project brainstorming
 - Funding availability

Marine Air-Ground Task Force Training Command

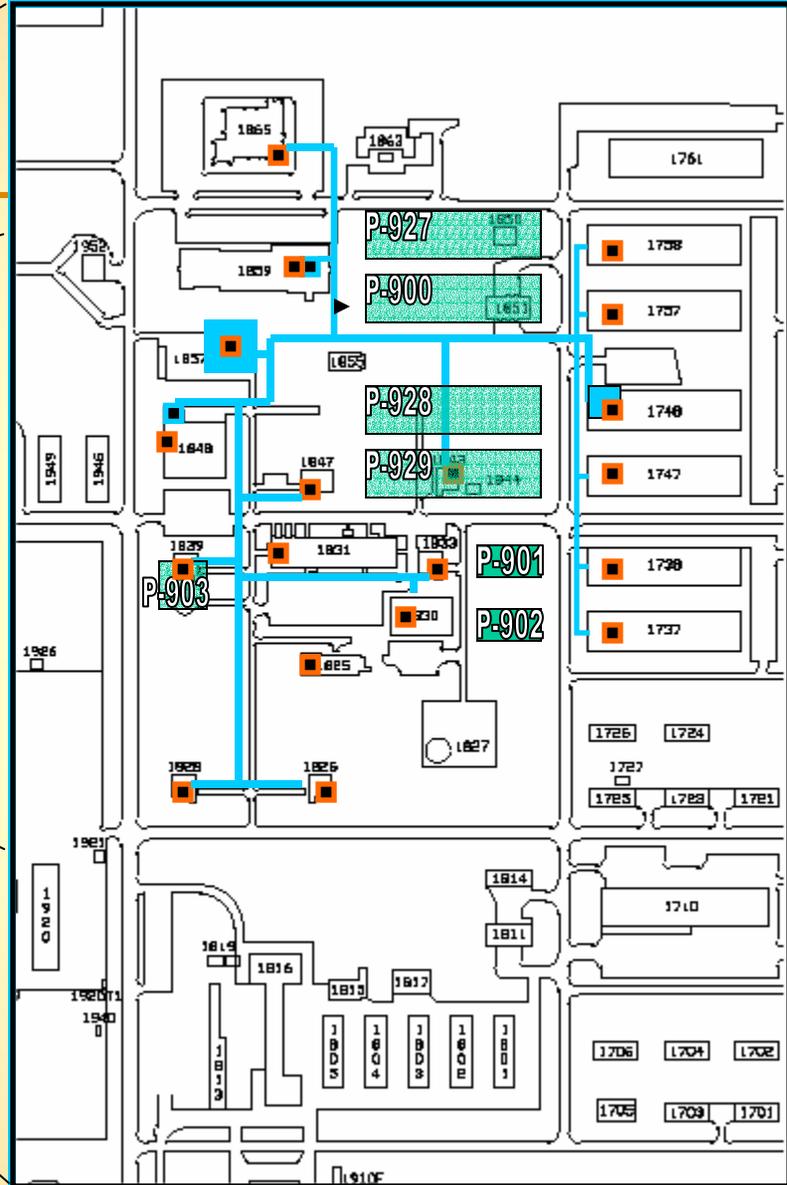
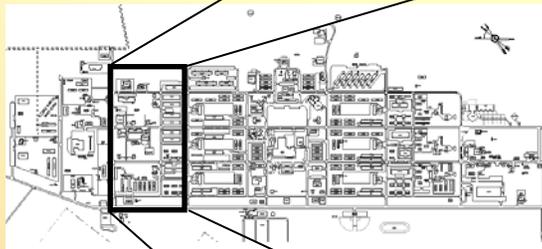


Marine Corps Base 29 Palms





PLANT B
(1500/1600 Area Buildings)



PLANT A
(1700/1800 Area Buildings)

Project development



- Know your loads
 - Analyze utilities data
- Know your facility
 - Condition and capacity of systems
- Project your future needs
 - Planning future growth requirements
- Where do you want to go
 - Baseline realistic savings
- Energy purchase/Energy contracts
- Selecting a contracting vehicle

Factors for 29 Palms



- Energy crisis –
 - Skyrocketing pricing
 - Limited budget
 - Energy reliability – Blackouts On and off base
 - Improve infrastructure
- Growing loads
 - Future growth capacity with current systems
 - Stay within current capacity
- Maintenance costs and equipment failures
 - Replace existing aging equipment
 - High heat environment
- Use available proven technologies

First step



- Reduce/stabilize energy costs
 - Direct access contract electricity
 - Saved \$2.8 million/year avoided cost increases
 - Combined Federal installation loads
 - DESC for combined gas purchase
 - Saves \$1,000,000
 - Combined Federal installation loads

ESPC vs UESC



- ESPC

- Risk assesment

- Mainly contractor
- Long time service arrangement R&R
- Guarentee savings with M&V
- Contractor involvement through life of project

- UESC

- Risk assesment

- Mainly Gov't
- No guarentee savings based on estimates
- No service

Second Step



- Decide on a series of project initiatives
- **Project 1** - Replace 5 Absorption chillers
Savings \$300K/year
- Concerns addressed
 - Aging units bad shape
 - Replace with High efficiency trane R123
 - Lower maintenance & add high reliability
 - First project testing the waters

Project 2



- 7.2 MW Cogeneration plant
- Concerns addressed
 - Energy reliability & Energy price stability
 - Backup generation
 - Future system growth
 - Aging infrastructure, control and system information

Project 3



- Day-lighting

- Reduce energy demand
- Extend infrastructure life
- Better lighting within buildings

- EMCS

- Reduce energy demand
- Upgrade systems
- Reduce maintenance by looking first
- Control major systems
- Future expansion

Project 3



- HVAC upgrades - chilled water plants
 - High heat short life
 - Aging equipment
 - Reduce demand
 - ATRP Secure
 - Anticipate growth
 - Reduce maintenance

- Photovoltaic
 - Energy reliability & Energy price stability
 - Less reliance on grid
 - Starting point for Future system growth
 - Control and system information

Federal & State resources used



- Federal

- FEMP

- Cogen
 - Oakridge Labs
- Photovoltaic
 - Sandia Labs

- State

- CPUC
- California Public Utilities Commission
- Rebate incentives
 - 4.5 cents per watt self generation
 - Many other programs

How the plan worked



- ESPC saves \$6.9 million/year
 - Savings invested into financing projects
- Peak shave 11 MW
- 62,072,865 KWH/yr saved
- Energy Managing \$3 million/yr
- Replaced Aging infrastructure
- Cogeneration plant
- Photovoltaic field
- 2-2500 ton capacity chilled water plants
- 1-1050 ton capacity chilled water plant
- EMCS upgrades
- Daylighting

