



# *Fleet Readiness Center Southwest*

FRCSW Energy Initiatives

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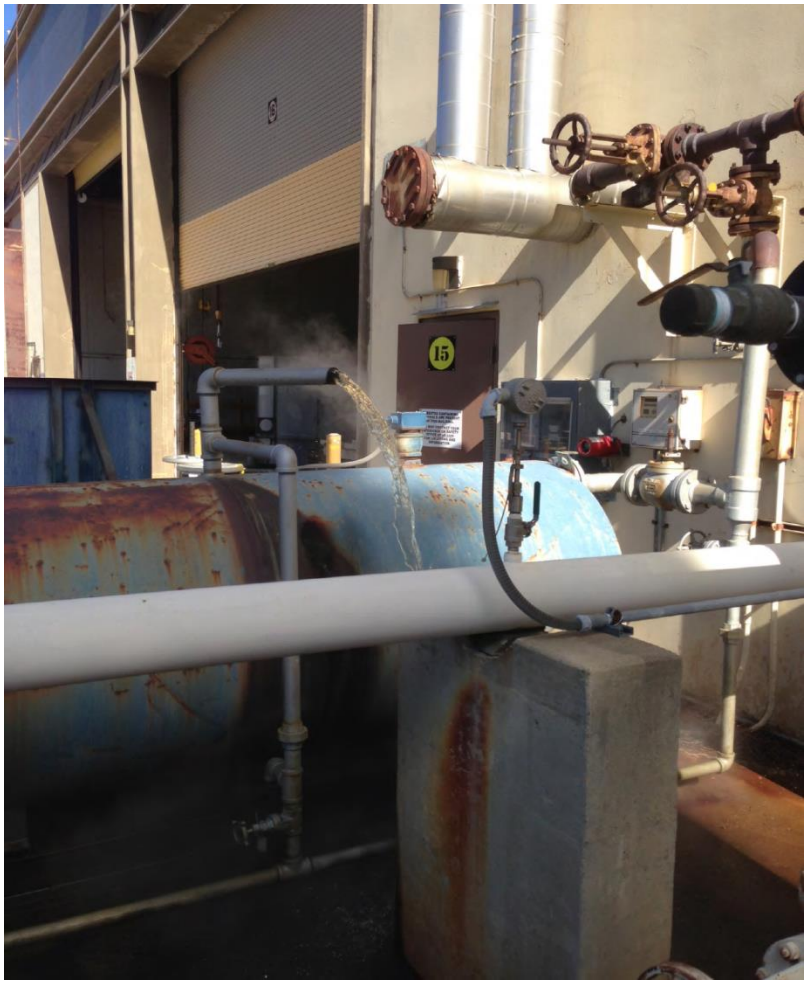
# Energy Service Performance Contract (ESPC)
# What is an ESPC?

**An Energy Service Performance Contract (ESPC) is a vehicle to implement energy efficiency and renewable projects.**

**An Energy Services Company (ESCO)**

**provides turn-key projects including:**

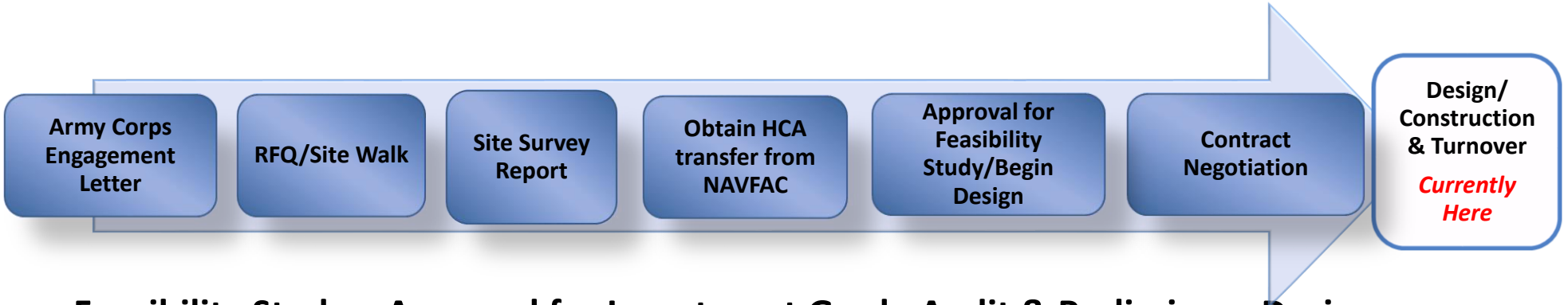
- **Development**
- **Design**
- **Financing**
- **Ongoing measurement and verification**
- **Ongoing maintenance of installed equipment**



# BENEFITS
# Why do an ESPC?

- **No upfront project funding needed - Development, design and procurement process is carried out by ESCO (which rolls into the fixed price design/build project)**
- **Guaranteed savings – If the savings are not realized the customer does not pay**
- **Financing- Provides for a self-funded project (no capital budget needed) with a positive cash flow. Additional savings year over year is kept by the customer**
- **Equipment maintained – Reduce the burden on maintenance staff by replacing aging systems and provide maintenance support for newly installed equipment**
- **Budget certainty - Lower the annual utility spend and hedge utility cost increases**

# ESPC PROCESS



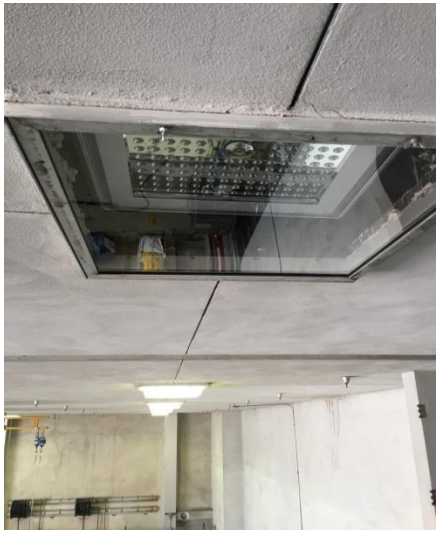

- **Feasibility Study – Approval for Investment Grade Audit & Preliminary Design**
  - **Soliciting banks for best loan rates**
  - **Vendor solidification on pricing**
  - **Solicitation for the best subcontractors**
- **ESC approval of projects**
- **Contract negotiations**
- **Detailed design and implementation**
  - **Construction**
  - **Measurement and Verification (M&V)**
  - **Operation and Maintenance (O&M)**

# FRCSW ACTIONS
# ENERGY SERVICE PERFORMANCE CONTRACT

- **Conducted ASHRAE Level II & Level III energy audits on over 1M square feet of FRCSW space to develop the best energy and water conservation projects**
- **Completes energy audit requirements set forth under the Energy Independence and Securities Act of 2007 (EISA 2007)**
- **The ESPC is set for completion in June 2017 at a cost of $25,206,354 and will yield the following annual savings:**
  - **2,760,111 kWh (9,420 MMBtu)**
  - **14,735 MMBtu of steam**
  - **317,913 kCF of compressed air**
  - **4,852 kGal of water**
  - **$2,781,916 in operational and utility costs**
  - **One time utility rebate of $475,266**

# ESPC PROJECT SCOPE – LIGHTING RETROFIT ECM

- **Lighting and Lighting Controls Upgrade**
  - Retrofit high bay MH 1,000 Watt lamps with dual occupancy and photocell sensor LEDs in Paint Complex
  - Retrofit 2,319 fluorescent fixtures with new LEDs and occupancy sensors in 3 additional buildings
  - Retrofit 210 exterior high pressure sodium (HPS) lamps with new induction and LED fixtures
  - Integrating and sequencing with new updates Direct Digital Controls (DDC) to regulate, dim and schedule lighting for complete optimization
  - Annual Savings
    - $167,214
    - 1,177,927 kWh



# ESPC PROJECT SCOPE – COMPRESSED AIR DECENTRALIZATION ECM

- **Compressed Air Decentralization and Optimization**
  - Removes 17 industrial buildings from antiquated central compressed air plant

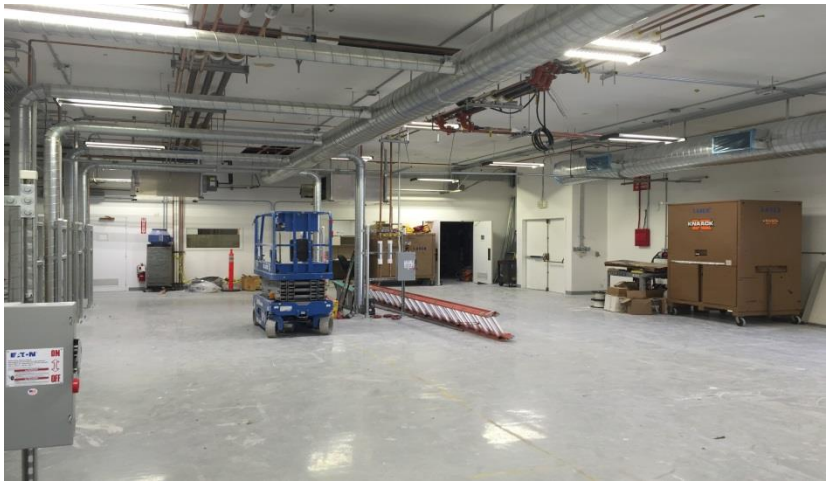
    -Bldgs. 472, 94, 250, 463, 458, 378, 379, Paint Complex, 460/C92, 65, 27, 194, 785
  - Provides 740 HP of new compressors with variable frequency drives (VFD), piping, receivers, DDC and ancillary equipment
  - Annual Savings
    - $874,288
    - 317,913 kCF

# Compressed Air Leak Detection Audit

- **FRCSW recently had a compressed air leak audit completed that found the following leaks:**

- **BLDG 472: 145 leaks**
- **BLDG 378: 86 leaks**
- **BLDG 379: 79 leaks**
- **BLDG 94: 61 leaks**
- **BLDG 460: 47 leaks**
- **BLDG 250: 34 leaks**
- **BLDG 65: 31 leaks**
- **BLDG 27: 22 leaks**
- **BLDG 463: 19 leaks**
- **BLDG 333 17 leaks**
- **BLDG 397: 11 leaks**
- **BLDG 194: 4 leaks**
- **BLDG 399: 3 leaks**

- **B-379 Laboratory Upgrades and Move from B-66**
  - Removal of single pass water system with new chiller and boiler system
  - Install solar thermal system for preheating boiler and hot water heaters
  - Install new upgraded wind tunnel system with VFDs, high efficiency chiller, condensing boilers, compressors with heat recovery systems, air handlers and Energy Management Control System (EMCS)



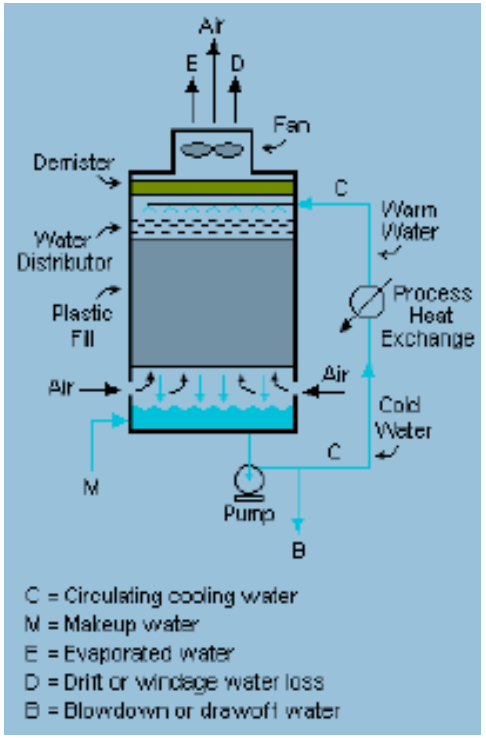
# ESPC PROJECT SCOPE – BLDG 463 LAB UPGRADES & Energy Management Controls Systems (EMCS)

- **B-463 Laboratory Upgrades**
  - Retrofit 16 air handlers with new economizers, VFDs and high efficiency motors
  - Two new chillers (950 tons) with primary/secondary pumps with magnetic bearing compressors
  - VFD controlled pumps
  - New zero bleed cooling towers
  - Heating hot water pumps
  - High efficiency condensing boilers
  - Energy Management Controls Systems
  - New two way chilled water valves
  - New compressors with heat recovery system
  - Airflow monitoring systems
  - Upgrade and sequence new Energy Management Controls Systems (EMCS)
  - Annual Savings
    - 3,390,657 kWh, 12,873 MMBtu of steam
    - $1,651,885

Existing Air Handler Unit

# ESPC PROJECT SCOPE – COOLING WATER TOWER AND INDUSTRIAL WASTEWATER UPGRADES

- **Cooling Tower Upgrades & Industrial Wastewater Controls**
  - Upgrade 3 buildings with new low evaporation cooling towers
  - Install new steam gun and wastewater controls on spray guns at the Paint Complex
  - Install new Energy Management Controls Systems (EMCS) on both cooling tower and spray guns
  - Annual Savings
    - 3,567 kGal of water, 1,106 MMBtu of steam
    - $394,979




Cooling Tower Schematic

# FINANCIAL SUMMARY OF PROJECT

| | |
|---|---|
| Project Costs: | $25,206,354 |
| Interest During Construction: | $1,203,930 |
| Contract Terms: | 13.99 years |
| ▪ Implementation: | 1 year, 10 months |
| ▪ Simple Payback: | 7 years |
| (Equipment pays for itself in energy savings) | |
| ▪ Period of Performance | 8 years, 3 months |
| (Extended Maintenance, extended warranties, DDC monitoring contract, Repair & Replacement Plan) | |

## Estimated Savings:

| | |
|---|---|
| • Electricity: | $385,229 |
| • Steam: | $752,040 |
| • Compressed Air: | $1,265,369 |
| • Water: | $67,122 |
| • O&M: | $696,917 |
| Total | $2,795,500 |

Guaranteed Savings (93.74%) $2,620,501

(By law, if we do not reach the guarantee, the ESCO must pay the difference)

# Questions?

## Thank you!

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