

# The Fort Irwin Challenge

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# Agenda

- Purpose
- Challenges
  - Maintain Infrastructure
  - Environmental Campaign Plan
  - Energy Campaign Plan
- Resources
- Contracting
- Way Ahead
- Questions



# Fort Irwin Universe

## Land: 763,477 Acres

Cantonment: 14,309

## Roads: 505 Miles

Paved: 171

Unpaved: 334

## \*Paved Areas: 297 Acres

Parking: 222

Sidewalks: 75

Excluding  
Roads

## Airfields:

Bicycle Lake

SCLA : Leased

Daggett Heliport: Leased

## Railroads:

MCLB - YERMO: Railhead

## Daily Population: 22,287

Tenant Units: 47

Rotational Soldiers: 5,103

Assigned Military: 4,815

Living on Installation: 3,286

Family Members: 6,836

Living on Installation: 5,138

Civilian Workforce: 5,422

FY09

IMCOM Resources

\$125M

## Buildings, ft<sup>2</sup>: 8,155,370

## Building Count: 1,589

Permanent: 1,304

Semi-Permanent: 107

Temporary: 175

Barstow Outreach Center: 1

Daggett Heliport: 2

## Family Housing Units: 2,314

New Construction (2004+): 620

Under Construction: 95

## Barracks 1,330

\*Single Soldier Barracks: 1,105

BOQ (100 Series/Old Tiefert): 121

Town Center Terrace: 104

\*Not Including 98, 99, 264; Add 122 Spaces

## Utilities: 170 Miles

Domestic Water: 82

RO Water: 42

Reclaimed Water: 4

Sewer Lines: 42

## Enviro Clean-Up Sites: 17 Sites

Restoration (IRP): 4

Munitions (MMRP): 8

Compliance Clean-Up (CC): 5

## Students (SVUSC): 1,890

Pre-School: 235

Lewis Elementary (K-2): 609

Tiefert View Intermediate (3-5): 453

Fort Irwin Middle School (6-9): 342

Off-Post SVHS: 251

Updated Sep 2009



# Environmental Campaign Plan



# Pollution Prevention(P2)

- Background: FY08 solid waste = 14,000 tons; recycled \$ = \$0.92M (3300 ton)
- Short Term Goal: Increase recycling to 3600 tons, gross income in FY 09 (\$1.0M)
  - Purchased 5000 green and 5000 blue 3-gal bins for trash and recyclables respectively in homes (kitchens) and offices
  - Purchased 100 large recycling containers w/individual compartments for different recyclable materials at all major facilities, fields and parks w/in cantonment and housing areas
  - Publicized recycled \$ returned to Family, Morale, Welfare , and Recreation
  - Conducting extensive public education campaign
  - Educating soldiers to leave no solid waste in the Box
- Long Term Goals: (FY10+)
  - Reduce solid waste from 2500 tons/yr to 200 tons/yr
    - Reuse pallets and utilize compost material
    - Conducting pilot project: use woodchips for tank trails dust control
    - Grind and re-use concrete and asphalt stock pile
  - Increase recycling to 10,000 tons/yr by expanding baling facility
  - Use best available technology to convert trash/waste to energy



# Hazardous Waste (HW)

- Background: FY08
  - Regulated toxic and non toxic wastes: 2.0M lbs
  - Turn-in volume accepted: 1.8M lbs (80% P2 rate)
  
- Short Term Goal: Improve HW program in FY09
  - Conducting 5 yr review of HW program
    - Incorporate changes into new HW contract
    - Implement public awareness campaign
    - Set new performance based benchmarks
  - Placed “battery boxes” at the PX/Commissary
  - Placed collection container for electronic waste at PX/Commissary
  - Improve tracking of on-site reuse rate
  
- Long Term Goals: (FY10+)
  - Increase P2 Rate to 90% by Dec 09



# Water/Wastewater

Background: FY08 water used, 850M gal  
FY09 – 884M gal

- Short Term Goal: Reduce water consumption
  - Implement leak detection program
  - Reduce response time to replace old leaking fixtures w/efficient fixtures
  - Improve irrigation practices
  - Use tertiary treatment (T2) plant water for irrigation saving 100M gal/yr
  - Transfer irrigation ownership from IAP to CH2MHill
  - Reduce grass footprint in Field Grade Housing
  - Implement incentive program in family housing similar to current electric billing where families get a rebate for conserving
  
- Long Term Goals: (FY10+) Reduce water use
  - Remove or replace non-mission essential green space
  - Extend T2 water irrigation pipes to all major green areas (200M gal/yr)
  - Construct construction fill stands using T2 water
  - Investigate engineering solutions, i.e. cisterns, and alternate sources of water, i.e. springs, gray water, etc. (included in Landscape Master Plan).



# Air Quality

- Background: FY07
  - Nitric oxide (NOx) emissions limited to 25 tons/yr, currently 22 tons/yr
  - PM10 (dust), 146 tons/yr
  - Carbon Dioxide: 5.2M lbs/rotation
- Short Term Goal (0-5 years) Improve air quality
  - Replace 70% generators with solar power systems in the box reducing NOx by 70%
  - Install emission controls on boilers
  - Increase dust suppressants on major tank trails reducing PM10 by 80%
  - FOB Standardization program will reduce CO2 emissions by 3.5M lbs/rotation (60% reduction)
- Long Term Goal (5 years and beyond)
  - Eliminate NOx emissions
  - Eliminate CO2 emissions





# Fort Irwin Energy Campaign Plan



# Fort Irwin's Energy Baseline

- 2003 Baseline: 100 MWH /yr (commercial power)
- 2007 Usage: 115 MWH/yr
  - Peak demand: 25 MW
  - Avg demand: 15 MW
- 2010 Projected Usage: 140 MWH/yr
  - Peak demand: 28 MW
  - Avg demand: 18 MW



# Renewable Energy Campaign Plan

- **Step 1:** Forward Operating Base (FOB) Modernization
  - Aggressive use of renewable energy decreases our reliance on fossil fuels and reduces harmful emissions into the air
  - Insulated tents reduce energy and maintenance requirements
  - Saves the Army over \$105M over the next 5 years



# Renewable Energy Campaign Plan

## Step 2

- Construct a 500MW thermal solar farm to include 30-50MW solar array for cantonment area.
- Have a Net Zero Energy building by FY10
- Achieve 100% solar exterior lighting for lights in the streets, jogging/walking paths, parking areas, airfields, etc by FY11
- Achieve 100% renewable energy capability in the “Box” by FY12



# Renewable Energy Campaign Plan

- **Step 3:** Achieve 24/7 totally renewable energy capability through use of efficient storage devices in National Training Center/Fort Irwin by FY14 through:
  - Power Generation
    - Solar
    - Wind
    - Geothermal
    - Waste to Energy
  - Reduce Demand
    - Conservation
    - Green Facilities
  - Cultural shift in “Business as Usual”
    - Electric Cars
    - Green Zone



# Renewable Energy Projects

- Installed PV panels and wind turbines in the “Box”
- Funded by Rapid Equipped Force as a demo for domes made of foam and shotcrete with concrete slab and renewable energy systems.
- Successful use of wind turbines and PV panels with battery that provided power for lights, air conditioning, and receptacles with LPG backup generator.
- Still in test mode and being monitored.
  - Affordable and timely construction.
  - Requires sound baffles to prevent loud echo effect.
  - When operational can provide power 24/7 for light admin load.



# Renewable Energy Projects

## Net Zero Energy Facility Constructed

- Recently constructed ammunition storage facility is not connected to the commercial electrical grid.
- PV panels, sky lights, and batteries produce all the electricity to power the lights and receptacles in this facility.
- Cost for renewable energy is \$12K cheaper than providing commercial power to this building.
  - Renewable energy power cost: \$62K
  - Commercial power cost: \$74K



# Renewable Energy Projects

- Deployable-Renewable Energy Power System (D-REPS) tested at Fort Irwin that will reduce fossil fuel consumption in isolated deployed areas to reduce the number of fossil fuel convoys that will reduce the risk to our Soldiers in theatre.
- Each D-REPS fits into a container and includes:
  - 5 KW peak of solar array
  - 80 deep cycle batteries totaling 1,000 amp-hours
  - Two 900-watt wind turbines
  - Two 3.5-kw inverters
  - Back-up 8-kw propane generator



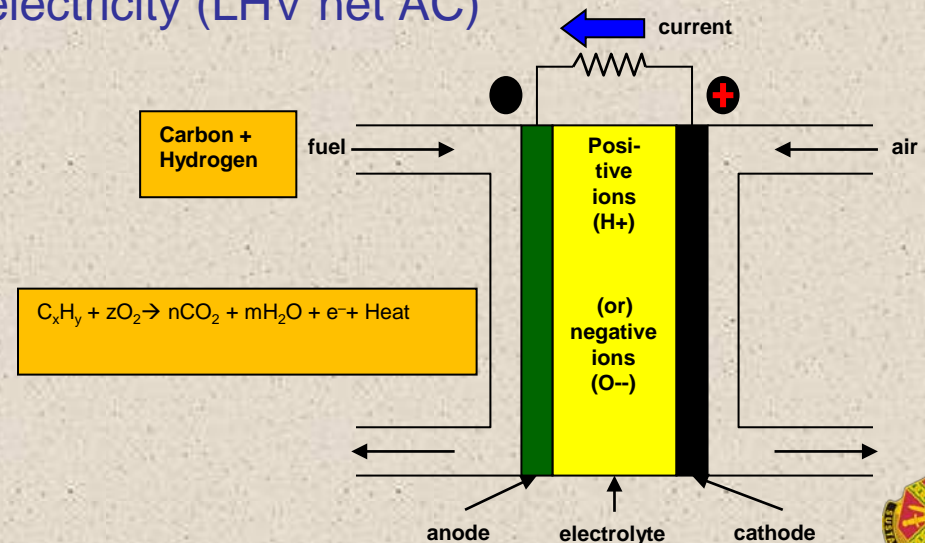
# Renewable Energy Projects

- Installed roof top panels on five buildings, 57KW, received \$92K rebates
  - Reduced buildings' energy consumption by as much as 3%.
  - Must coordinate with electrical utility to ensure that no renewable energy “leaks” back into the grid to create a safety issue for the utility work crews.



# Renewable Energy Projects

- Installed 100 KW planar solid oxide fuel cell (PSOFC) generator to power DOL refrigeration and freezer units 24/7 as a Construction Engineering Research Laboratory (CERL) Demonstration Project for one year to:
  - Verify fuel cell generator performs under a variety of operational scenarios
  - Demonstrate fuel cell generator performs in the demanding desert environment
  - Demonstrate fuel cell generator will successfully run on propane fuel
  - Target availability: up to 99% electrical availability on a system level
  - Target efficiency: up to 42% electricity (LHV net AC)



# Solar Lights

- Fort Irwin installed numerous exterior solar lights throughout the installation and plan to replace all exterior electrical street lights with solar powered LED lights.

Lights up bus stop and mail boxes



Illuminates dark corner near youth facilities



Keeps joggers safe during night runs



Brightens very dark driveway



Provides well lit school corner



# Solar Signs

- Fort Irwin began to construct solar traffic signs at two major intersections to improve community safety.



# MILCON Projects

## Installation Projects in the works

- Soldier and Family Support Center Campus, Phase-1
- Soldier and Family Support Center Campus, Phase-2
- Barracks 1
- HQS National Training Center
- Fire Station
- Company Operation Facility
- Warehouse, Central Receiving Facility
- Qualification Training Range
- Modified Record Fire Range
- Infantry Squad Battle Course



# “Stimulus” Projects \$11.5M

## Installation to contract by end of Dec 09: \$3.5M

Repair Pre-School Playground Area

Repair Infant Playground Area

Repair Kitchen Ventilation System Bldg 1317

Construct Parking Lot Lights Bldg 940

Repair of Teen Bldg/Middle School

Repair Street Lights & Install Solar Street Lights for Contonment Area - Ph2

Repair HVAC Units - Augmentee Barracks

Repair Billets And Latrine/Shower Reserve Component

Repair Street Lights & Install Solar Street Lights For Contonment Area – Ph1

Construct Additional Perimeter Lights ASP - Phase 3

## Corps of Engineers Awarded end of Sep 09: \$8.0M

Repair Athletic Center Bldgs Repairs To Finishes, Hvac, Walls, Floors, Etc.

Repair Shoulders Truck-By-Pass Phase 4

Repair Chilled/Hot Loop Feed System Ph 3

Repair Barracks Bldg 98-Repair Walls, Floors, Ceilings, Latrines, Elec

Repair Barracks Bldg 264-Repair Walls, Floors, Ceilings, Latrines, Elec



# Contracting

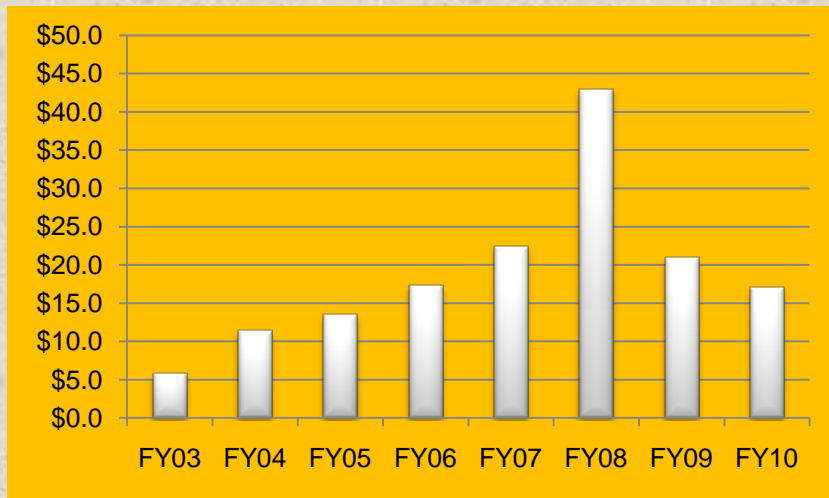
- **Contracting Vehicles:** DPW does not award contracts rather use following agencies to award and execute project
  - Army Contracting Agency, Fort Irwin Contracting Office
  - US Army Corps of Engineers
  - South West Navy
  - General Services Administration; Require Offloading approval from Fort Irwin Contracting Office.
- **DPW Function:**
  - Prepare project scope, design , Estimate and Contract Award Package
  - Service Contracts require Service Contract Approval from HQ (IMCOM)
  - Monitor QA/QC, Schedule, Liaison with Fort Irwin Customer
- **Word of Wisdom for A-E Firms and Contractors:**
  - Register with the above agencies to get business at Fort Irwin
  - If you are 8-A or Small business, work with these agencies and SBA



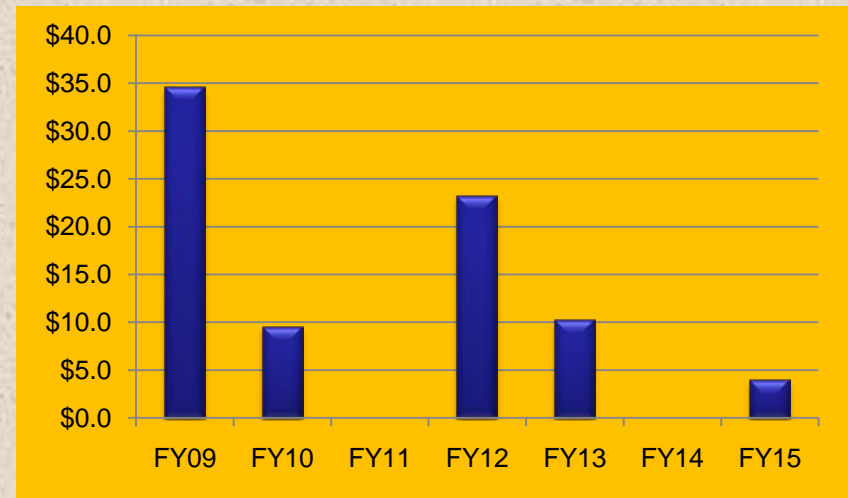
# Resources

- Personnel
  - Requirement: 72
  - Authorized: 36
  - On-hand: 35
- Funding

## SRM\$



## MILCON\$



# Way Ahead

- Hire/obtain additional personnel:
  - Designers (contractors)
  - Quality Assurance (contractors/DA civilians)
  - Environmentalists (DA civilians)
  - Engineer Technicians (DA civilians)
  - Project Engineers (DA civilians)
- Increase funding
- Finalize master planning update
- Seek private venture support to finance projects through various means: Energy Savings Performance Contracts, Utilities Energy Service Contract, Enhanced Use Lease, Power Purchase Agreements, etc.



# Questions?

