



Energy & Water Security through Army Utilities Privatization (UP)

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Overview of Army UP



UP leverages industry expertise & financing to upgrade and sustain utilities for safe & efficient mission support.

- ✓ 44% Life-Cycle Benefits (compared to Army ownership):
 - 27% "Should-Cost" avoidance (\$2.2 B Net Present Value)
 - Less Leaks & Losses (17% cost avoidance)
 - Reduced Risk & Liability
 - Energy Security & Resilience
 - Shovel-ready year-end projects

Unquantified Benefits



- ✓ Benefit-to-Cost Ratio = 18 to 1
- ✓ Full Sustainment Platform (10 USC §2688: 50-year contract authority)



Fort Belvoir
FY09 UP

Backlog



**... threatens
Mission, Health,
Safety &
Environment**



Risk Management

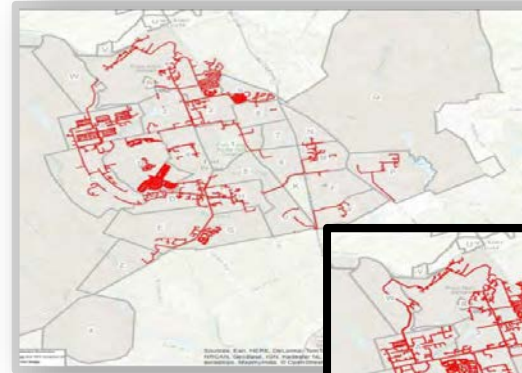


San Bruno, CA 2010



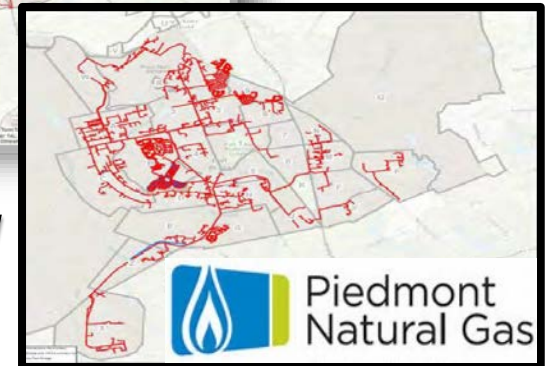
Fort Benjamin Harrison 1990
Explosion: 2 killed, 27 injured
NTSB found Army negligence

 **Fort Bragg
FY13 Gas UP:**



*Missing
Inventory*

Actual



366 Leaks Detected
92 Grade 1 Leaks



FY16 Metered UP Results



31% less Gas use

68% less Oil use

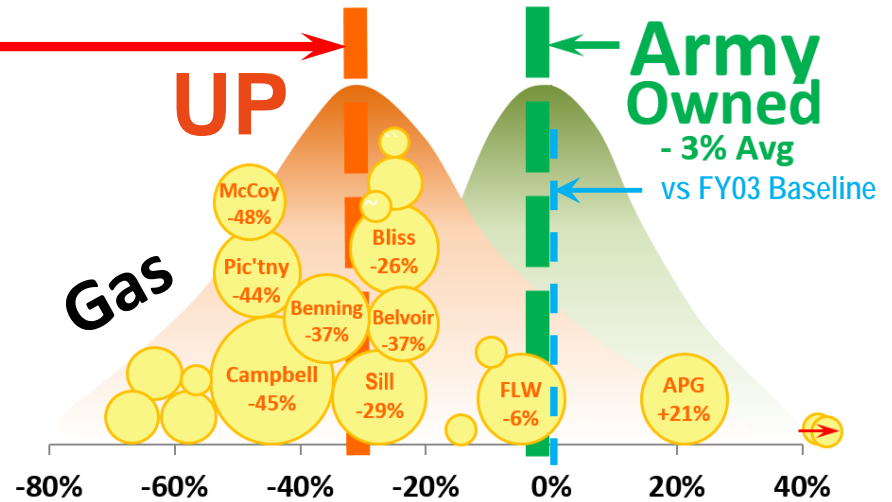
@ 19 Gas UP sites

\$33 M/yr cost avoidance

3% net Electric savings

@ 23 UP sites

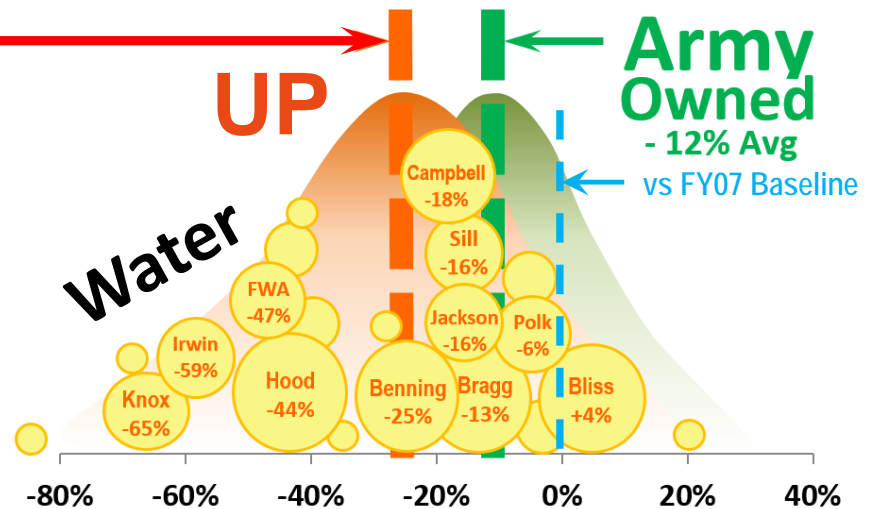
\$6 M/yr cost avoidance



26% less Water use

@ 21 UP sites

\$10 M/yr cost avoidance



\$49 M/yr cost avoidance



Affordable Risk Management



Project Options (FY17-19 UP)

- \$967M** MILCON unplanned
(ISR repair estimate)
- \$703M** UP Lump-Sum
(USMA Parametric Model)
- ~\$70M/yr** UP Amortized



*Strategic investments
for critical missions*

- ✓ **Affordable**
- ✓ **Resilient**
- ✓ **Efficient**
- ✓ **Safe**

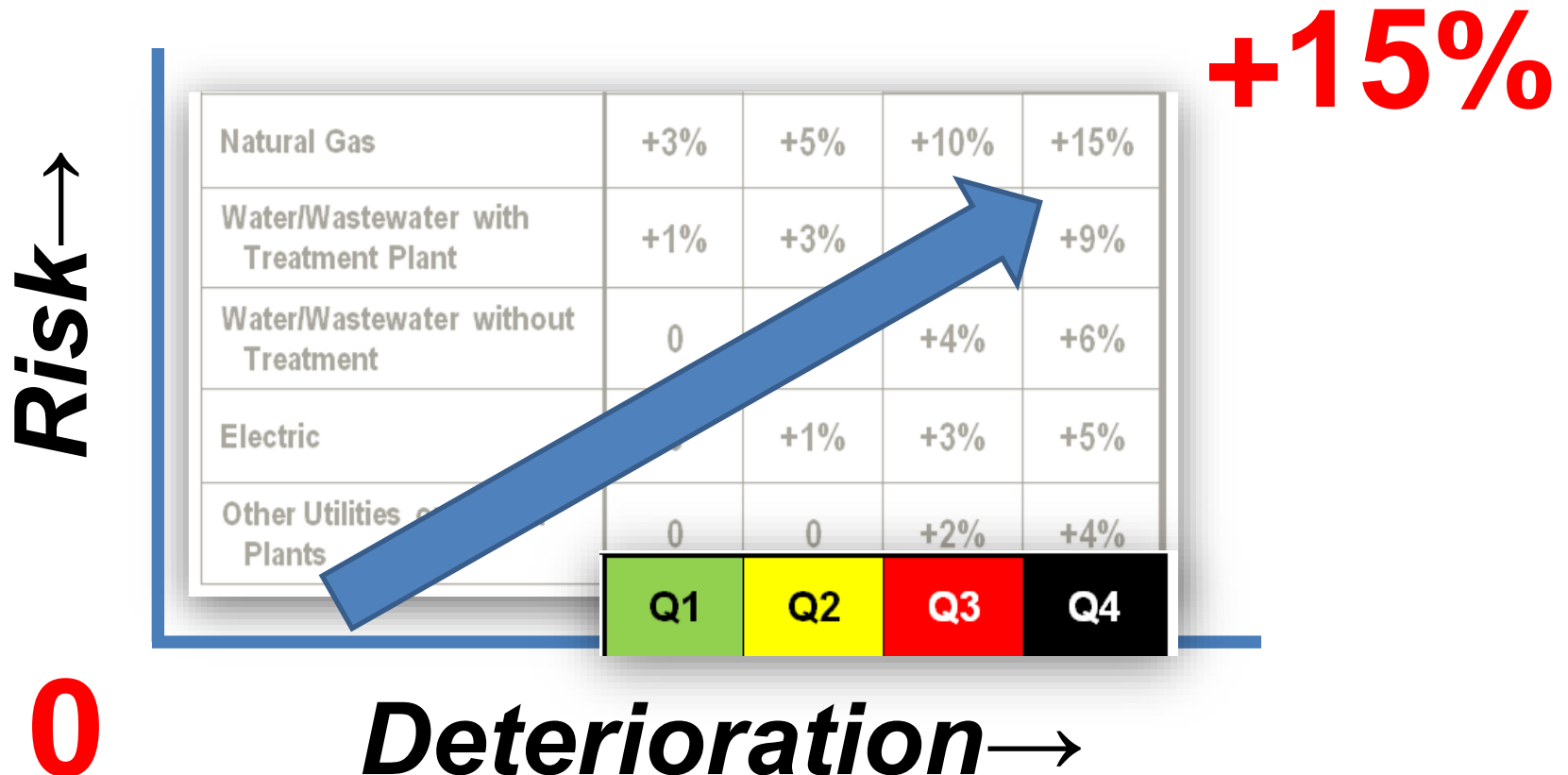


Army Conveyance Policies



10 USC §2688 conveyance authority delegation:

- *Adjusts for condition & risk (Nov'14)*
- *Consider Energy Security & other factors (Apr'16)*





UP Energy Security



OLD Electro-Mechanical



UP brings more resilient & capable mission support

NEW Digital



\$353M in UP Projects

FY06-15 on 17 utility systems

- Deficiency Correction
- Redesign & reconfigure
- Modern controls
- Full Sustainment





\$353M ES Measures Completed



Electric: Gordon, Belvoir, Natick, Myer-McNair-H.Hall, Polk, APG, Arlington Nt'l Cemetery, Gillem, Alaska
Natural Gas: Richardson, Bragg, Gillem. **Heat & Power:** Greely, Wainwright

Energy Security Measures:

Sites:

1. Periodic Renewal & Replacement	✓ All
2. Distribution voltage upgrade	11
3. Install SCADA system	12
4. Add redundant supply lines	13
5. Replace switchgear or substation	12
6. Install generation	8
7. System modeling, studies, & testing	✓ All
8. Replace gas lines	3
9. Micro-Grid	1

FY16 Electric & Natural Gas at Fort Hood will add \$106M in projects.

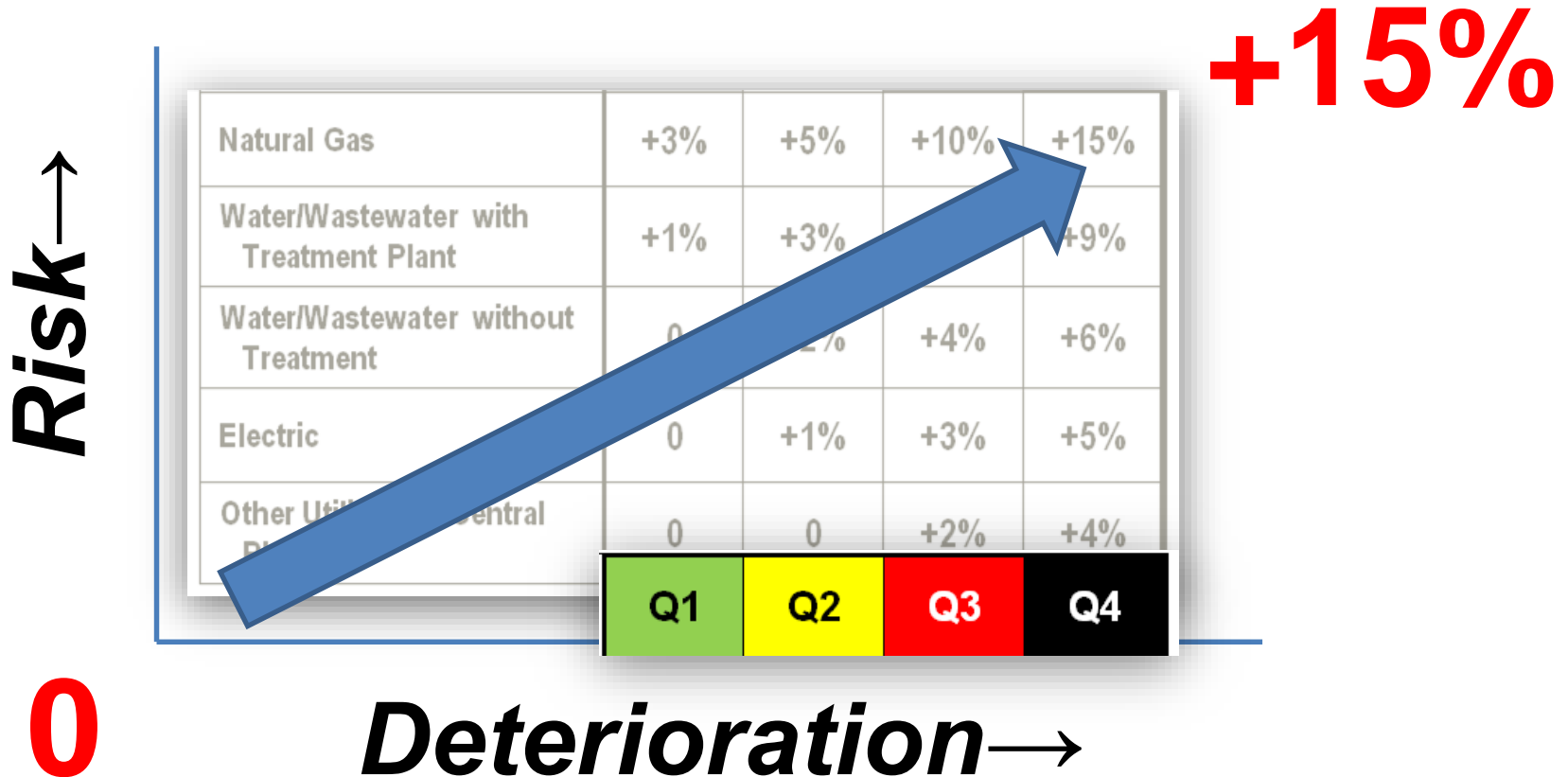


Army UP is Out in Front



10 USC §2688 conveyance authority delegation:

- *Adjusts for condition & risk (Nov'14)*
- *Energy Security emphasis & other factors (Apr'16)*





Emerging ES Opportunities



Sec Army Policy Emphasis on ES

- ✓ Deployment of Combined Heat & Power (CHP) 1 Nov 16
- ✓ Army Installation Energy & Water Security Policy (23 Feb 17)

Army UP ES Initiatives

- ✓ Conveyance delegation guidelines consider ES (1 Apr 16)
- ✓ ES informed UP Schedule thru FY2023 (17 May 16)
- ✓ Incorporate MicroGrid & Co-Gen projects, where appropriate
- ✓ Coordination with Energy Initiatives Task Force
- UP schedule to direct evaluation of thermal utility systems
 - In addition to Electric, Water & Wastewater, Gas
 - Evaluate systematically; rather than by exception

Utilities Privatization:

E= electric G= natural gas W= water WW= wastewater P= heat & power

154 Privatized Systems

Aberdeen PG: E,G,W+WW	McNair & Myer: E,G
Aberdeen (Edgewood): G	Meade: E,G,W+WW
Adelphi Lab: G	Natick Lab: E,G
Arlington Ntl Cemetery: E	Oahu, Schofield Barracks : WW
A.P. Hill: E,W+WW	Ord Community: E,G,W+WW
Belvoir: E,G,W+WW	Parks RFTA: E,G,W+WW
Benning: E,G,W+WW	Picatiny Arsenal: E,G,W+WW
Bliss: E,G, W+WW	Pickett: E,W
Blue Grass AD: G	Polk: E,W+WW
Bragg: E,G,W+WW	Presideo of Monterey: E,G,W+WW
Campbell: G,W+WW	Red River AD: E,W+WW
Detrick: G	Redstone Arsenal: WW
Detroit Arsenal: G	Rucker: E,G,W+WW
Devens: E,G,W+WW	Sierra AD: E,G
Gillem: E,G,W+WW	Sill: G,W+WW
Gordon: E,G,W+WW	Stewart: E; G @sub-post
Greely: E,W+WW,P	Sunny Point MOT: E
Hawaii: W	Tooele AD: G
Hood: E,G,W+WW	Vancouver Barracks: G
Huachuca: E	Watervliet G
Hunter AAF: E	Wainwright: E,W+WW,P
Irwin: E,W+WW	Yakima Training Center: G
Jackson: W+WW	<u>22 Joint Base & BRAC Systems:</u>
Knox: E,W+WW	Dix: E,G
Leavenworth: E,W+WW	Eustis & Story: E,G,W+WW
Lee: E,W+WW	Monmouth: G
Leonard Wood: E,G	Monroe: E,W+WW
Letterkenny AD: W+WW	Richardson: E,G,W+WW,P
Lewis: G	Sam Houston: E,G
McCoy: E,G	Walter Reed AMC: G

UP Decision Schedule ACSIM Memo 17 May 16

FY17

Fort Campbell: E
Blue Grass AD: E
Joint-Base (JB) Lewis-McChord: E
Fort Riley : E,G,W+WW
USAG West Point: E,G
Fort Jackson : E,G

FY18

JB Lewis-McChord: W+WW
USAG West Point: W+WW,P
Pine Bluff Arsenal: G
Oahu , Schofield Barracks : E
Fort Leonard Wood: W+WW
Fort Buchannan: E,W+WW
Hawaii (PTA & KMC): WW
Oahu , Schofield Barracks: W

FY19

Anniston AD: W+WW
Aberdeen (Edgewood): W+WW
Yuma PG: E,W+WW
JB Myer,H.Hall & ANC: W+WW
Redstone Arsenal: E,G,W
Rock Is. Arsenal: E,G,W+WW

FY20

Watervliet Arsenal: E,W+WW
White Sands MR: E,G,W+WW
Tobyhanna AD: W+WW
Ft McNair & Arlington Cemetery: G
Fort Carson: E,G
Fort Detrick: E,W+WW

FY21

USAG Kwajalein Atoll: E,W+WW,P
Dugway PG: E,G,W+WW
Fort Carson: W+WW
Radford AAP: E,G,W+WW

FY22

Fort Drum: E,G
Rivanna Station: E,G,W+WW
Fort Hamilton: E,G,W+WW
Red River AD (RRAD): G,P
Tooele Army Depot: E,W+WW,P
Fort Hunter-Liggett: W+WW

FY23

Fort Drum: W+WW
Fort Hunter-Liggett: E,G
Mark Center: WW
Parks RFTA: E,G
Scranton AAP: E,W+WW
Iowa AAP: E,G,W+WW

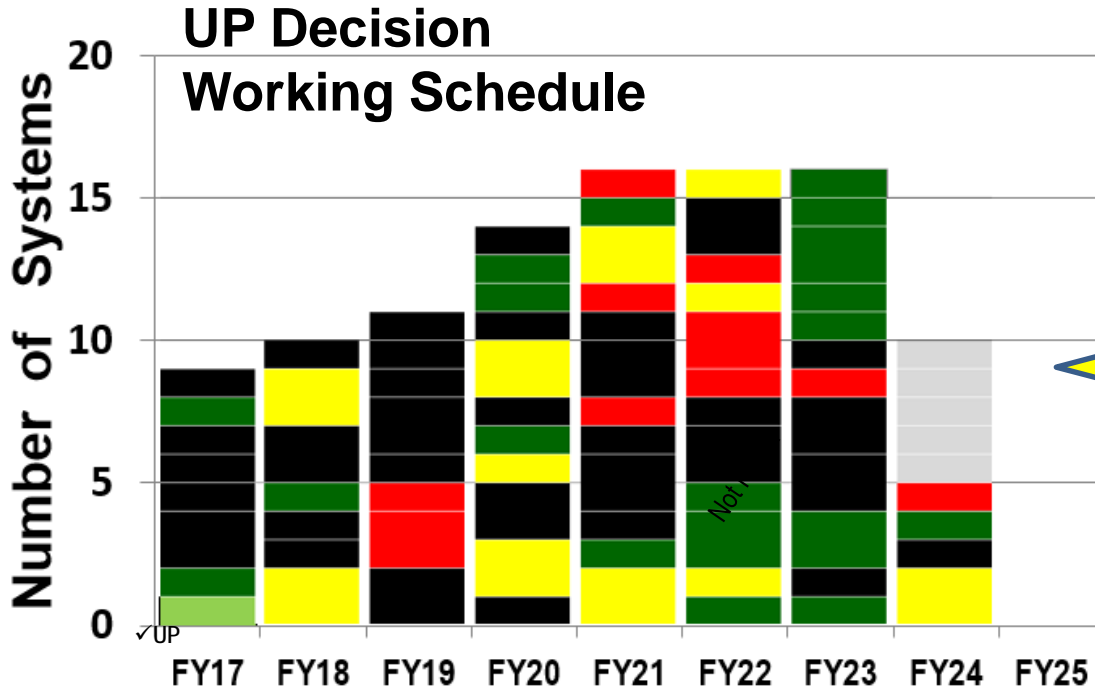


UP Strategic Imperatives



Add Thermal Systems into UP Schedule

UP supports Energy Security, resilience, and combined Heat & Power objectives.



Heat & Power

Q4	Q4
Q4	Q3
Q3	Q4
Q3	Q4
Q3	Q3
Q4	Q3
Q4	Q3
Q4	Q4
Q3	Q3
Q4	Q4
Q3	Q3
Q4	Q3

Chilled Water

Q3	Q3
Q3	Q3
Q4	Q4
Q3	Q4
Q3	Q3
Q3	Q3

... and other failing utilities

W = water WW = wastewater E = electric G = gas

FY17 ISR Condition Ratings:

Q1	Excellent	Q3	Poor
Q2	Nominal	Q4	Failing

E	Q3	G	Q4
W	Q4	E	Q3
W	Q4	E	Q3
E	Q4	W	Q4
E	Q3	E	Q4
WW	Q3	W	Q3
E	Q3	WW	Q4
WW	Q4	E	Q3