



IMCOM Readiness Energy Resilience and Modernization



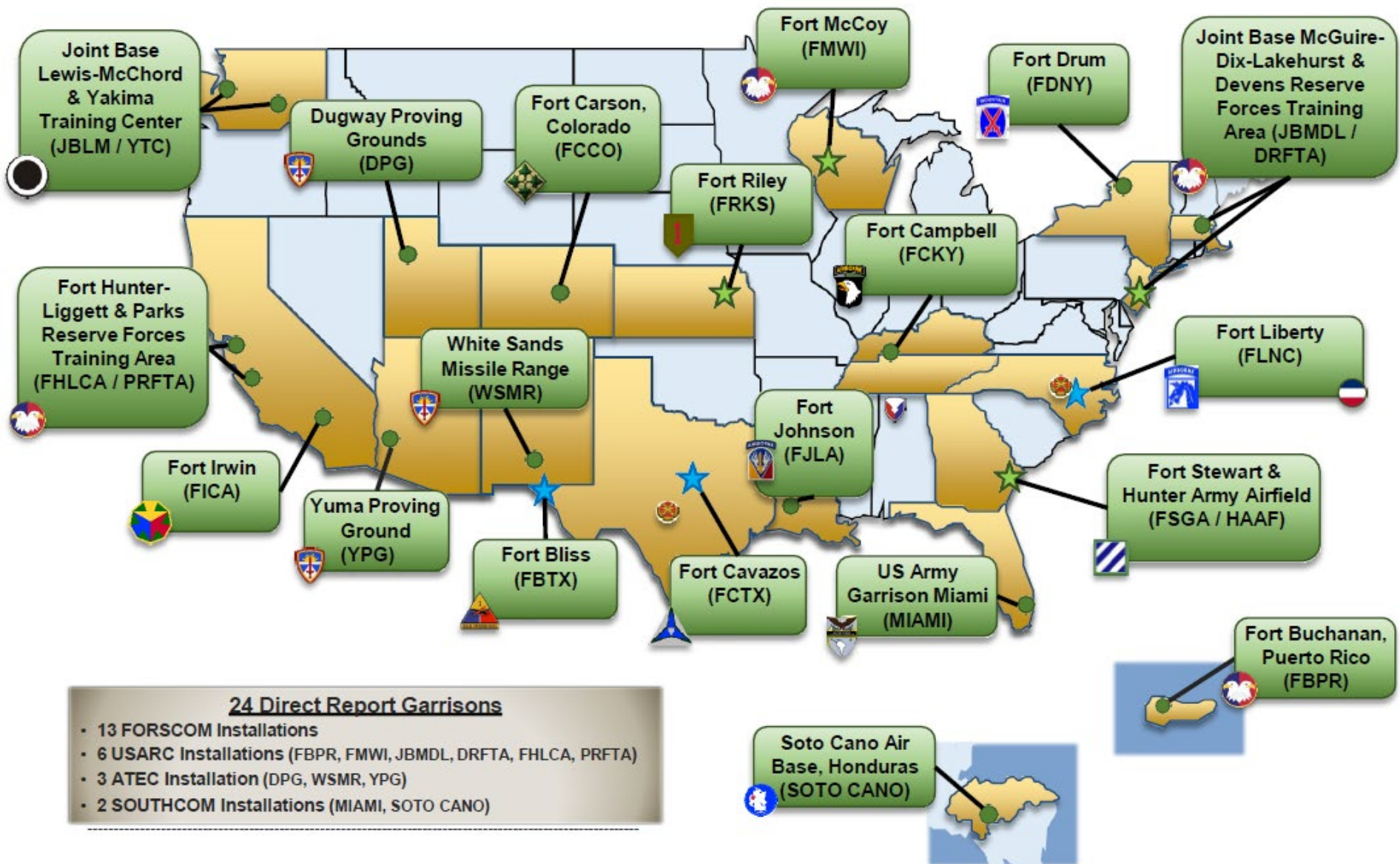
WE ARE THE ARMY'S HOME



Controlled by: USAG Fort Liberty
Controlled by: AMIM-LIP-OU
CUI Category: CEII

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IMCOM READINESS PORTFOLIO



24 Direct Report Garrisons

- 13 FORSCOM Installations
- 6 USARC Installations (FBPR, FMWI, JBMDL, DRFTA, FHLCA, PRFTA)
- 3 ATEC Installation (DPG, WSMR, YPG)
- 2 SOUTHCOM Installations (MIAMI, SOTO CANO)

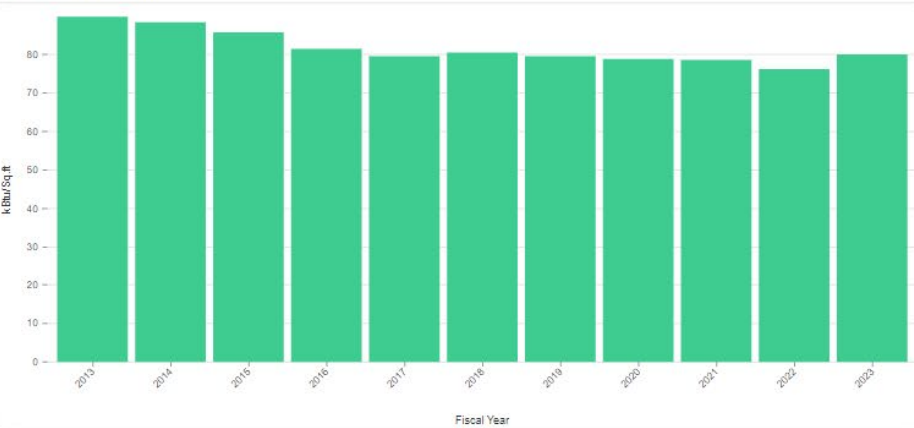


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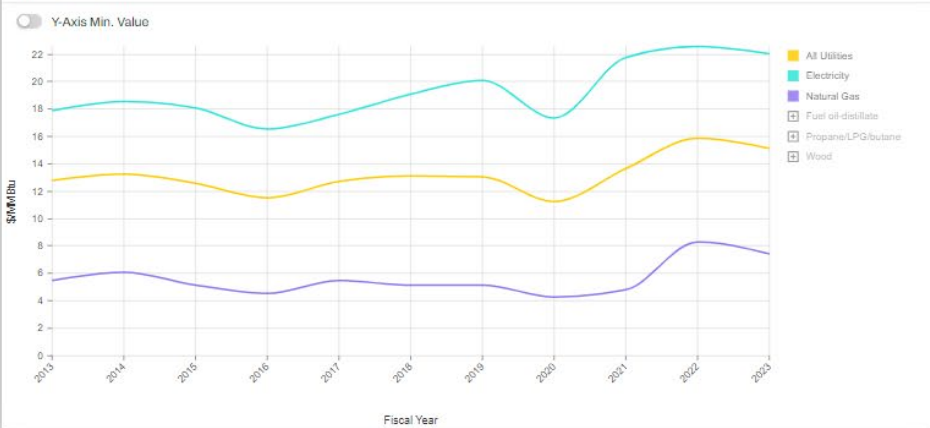


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Energy Use Intensity



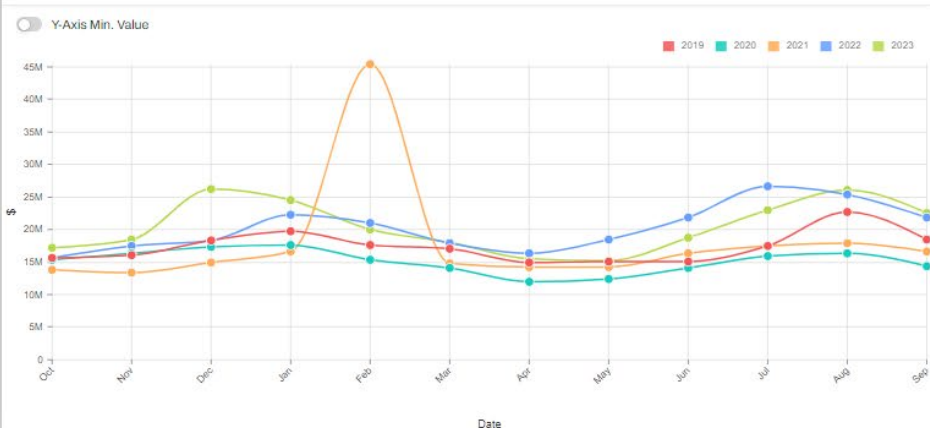
Energy Rate



Energy Cost and Consumption



Total Energy Cost



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LINE OF EFFORT 1: INSTALLATIONS

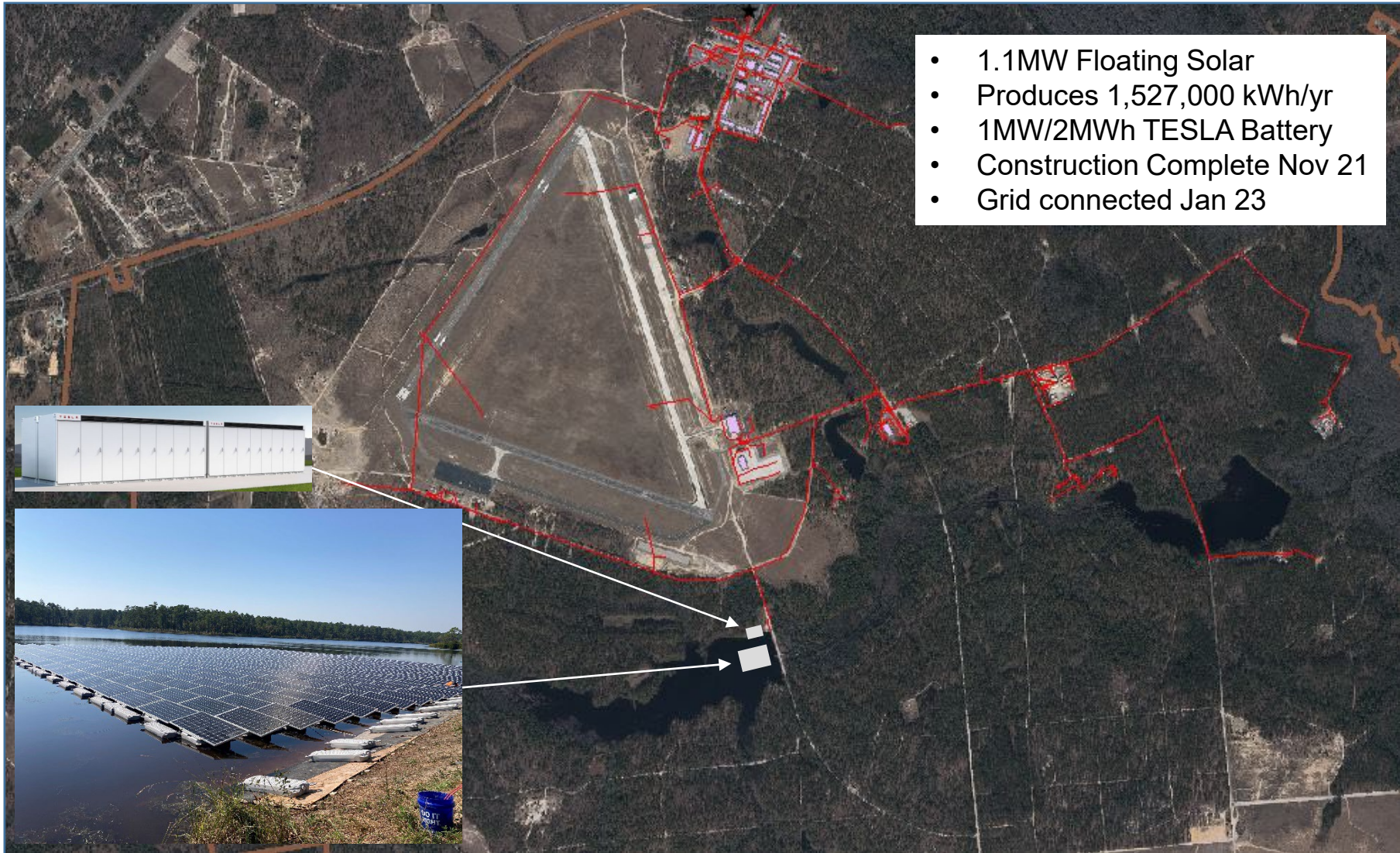
STRATEGIC OUTCOME:

Enhance resilience and sustainability by adapting infrastructure and natural environments to climate change risks, securing access to training and testing lands into the future, and mitigating GHG emissions

INTERMEDIATE OBJECTIVES:

- | | |
|------|--|
| 1.1 | Install a microgrid on every installation by 2035 |
| 1.2 | Achieve on-site carbon pollution-free power generation for Army critical missions on all installations by 2040 |
| 1.3 | Provide 100% carbon-pollution-free electricity for Army installations' needs by 2030 |
| 1.4 | Implement installation-wide building control systems by 2028 |
| 1.5 | Achieve 50% reduction in GHG emissions from all Army buildings by 2032, from a 2005 baseline |
| 1.6 | Attain net-zero GHG emissions from Army installations by 2045 |
| 1.7 | Field an all-electric light-duty non-tactical vehicle fleet by 2027 |
| 1.8 | Field an all-electric non-tactical vehicle fleet by 2035 |
| 1.9 | Continue to advocate for an expanded Army Compatible Use Buffer |
| 1.10 | Include climate change threat mitigation into Army land management decisions |
| 1.11 | Incorporate the latest climate and environmental science into stationing, construction, and fielding decisions |

INNOVATIVE SOLUTIONS



- 1.1MW Floating Solar
- Produces 1,527,000 kWh/yr
- 1MW/2MWh TESLA Battery
- Construction Complete Nov 21
- Grid connected Jan 23

INNOVATIVE SOLUTIONS



U.S. ARMY FLOATING SOLAR ARRAY FORT LIBERTY, NORTH CAROLINA

The Army is deploying a carbon free electricity project with controls, storage, and alternative backup systems to increase Army Readiness, enhance fighting force capability, increase installation energy resilience, and reduce greenhouse emissions, all in support of the Army Climate Strategy.



Floating Solar Array, Fort Liberty, North Carolina

Fort Liberty, in collaboration with Duke Energy and Ameresco, through a Utility Energy Service Contract (UESC), developed the first of its kind in the Department of Defense and the largest floating system in the Southeast United States. The 1.1 megawatt (MW) floating solar system located on the Big Muddy Lake at Camp Mackall on Fort Liberty also includes a 1 MW/2 MWh battery energy storage system. The project provides carbon free on-site generation, supplements power to the local grid, and provides backup power for Camp Mackall during electricity outages.

An electronic "recloser," funded by the Environmental Security Technology Certification Program, is also being demonstrated as part of the system. Reclosers respond to transient events, like a tree limb brushing against a power line, to quickly reset the system and restore power. This technology provides better protection for system power lines and minimizes damage to sensitive electronic equipment in the event of power interruption.

About Fort Liberty, North Carolina

Fort Liberty is home of the headquarters for the U.S. Army Forces Command, U.S. Army Special Operations Command, and U.S. Army Reserve Command. Fort Liberty is also home of the Joint Special Operations Command, the XVIII Airborne Corps, and the 82nd Airborne Division. Womack Army Medical Center, also located at Fort Liberty, is a 1.1 million square feet, 138-bed hospital located on the post serving more than 160,000 eligible beneficiaries, the largest beneficiary population in the Army.

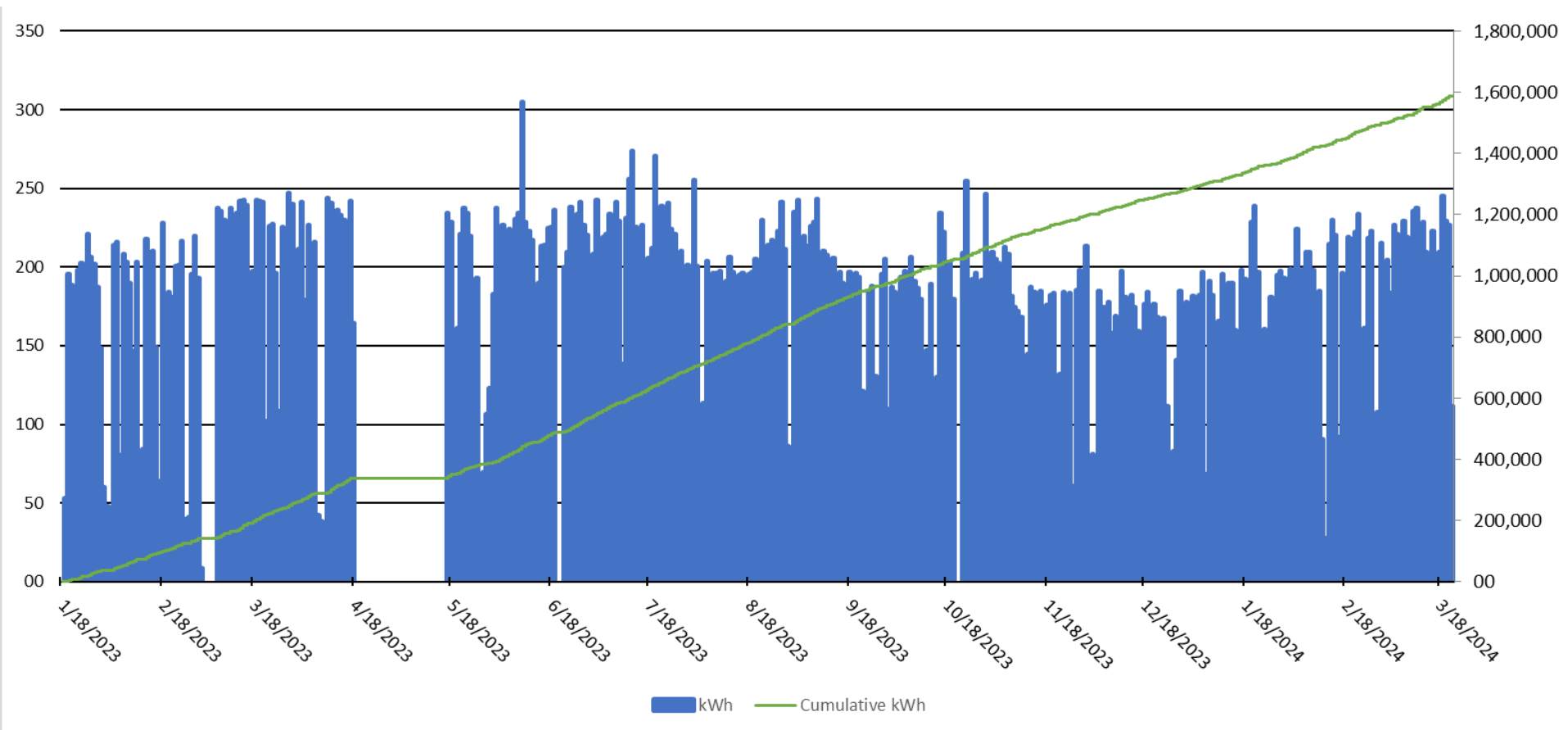
PROJECT DETAILS

- Size of solar array – 2.3 acres
- Number of panels – 2,700
- Power capability – 1.1 MW (~735 homes)
- High voltage – 12,470 Volts (V)
- Low voltage – 480 V
- Annual energy estimate – 1.658 Gigawatt hours
- Panel Manufacturer – LG
- Inverter Manufacturer – SMA
- Battery Manufacturer – Tesla
- Save over \$2 million in first year utility costs
- \$36 million UESC Design-Build Contract Value
- Reduce site energy use by 7%
- Reduce water use by 20%
- Increase energy resilience at mission critical Post
- Renewable energy and on-site energy generation, including 1.1 MW floating solar PV system
- 1 MW / 2 MWh battery energy storage system
- Boiler, HVAC and Lighting system improvements
- Water conservation systems
- This system will supplement power from the local grid and provide backup power during electric service outages



INNOVATIVE SOLUTIONS

kWh PRODUCTION



INNOVATIVE SOLUTIONS

kWh PRODUCTION



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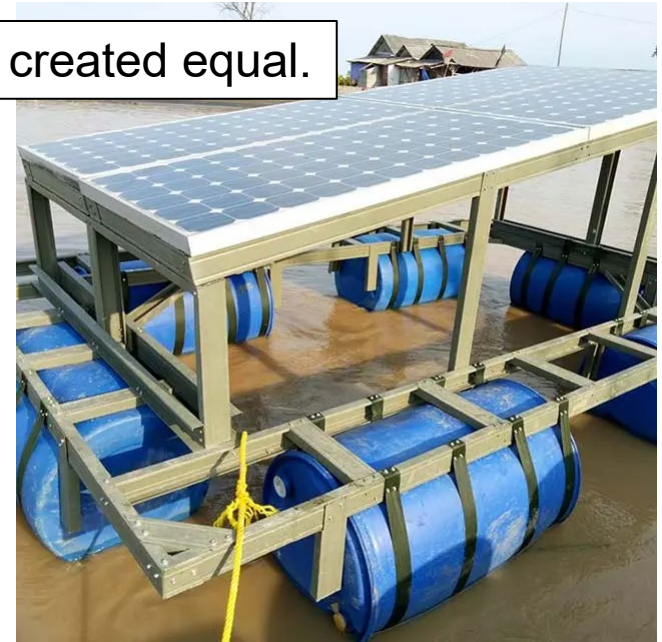
PROs

- Use on multiple types of water bodies
- Reduced evaporation
- Shade reduced algae blooms
- Reduced deforestation
- Smaller footprint vs ground mounted
- Greater efficiency from water
- Other ecological benefits

CONs

- Reduced recreational use
- Design restricts gas exchange
- Limited research on chemical leaching

All floating solar is not created equal.





Legend
Array 1 - 1MWp
Array 2 - 1MWp



USAG MIAMI - SOUTHCOMM - Doral, Florida - 2 MWp floating PV system
2,540 PV modules (590 Wp - Hydrelia aiR Optim 5° E/W Duo)



Questions??