

# Department of State Bureau of Overseas Buildings Operations Industry Day

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JUNE  
29-30  
2023  
WASHINGTON • D.C.



## Design & Engineering Overview



U.S. DEPARTMENT OF STATE  
BUREAU OF OVERSEAS BUILDINGS OPERATIONS

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# OBO Industry Day

Office of Design and Engineering (DE)

June 29, 2023

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# Design and Engineering Overview

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Structure, Summary, & Areas of Focus

**John Pitts (OBO/PDCS/DE)**  
*Office Director (Acting)*

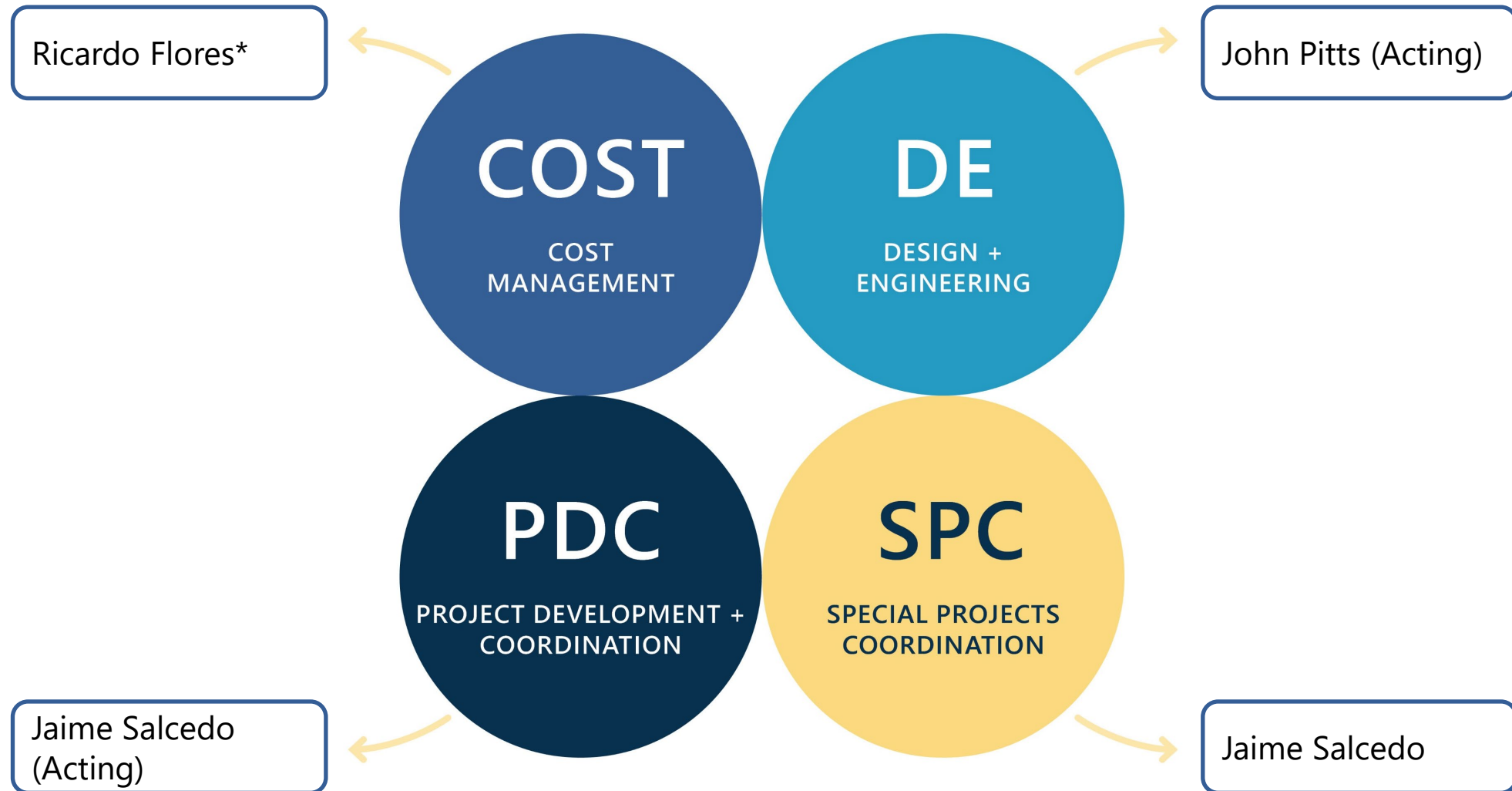
**Dawna Wright OBO/PDCS/DE/EE)**  
*Division Director, Electrical  
Engineering*

**Joe Cafferata (OBO/PDCS/DE/ME)**  
*Division Director, Mechanical  
Engineering Division*

**John Pitts (OBO/PDCS/DE/CSE)**  
*Civil/Structural Engineering*



# Program Development, Coordination, & Support (PDCS) — Overview



# Why Innovation?

**Innovation** allows us to provide:

- Return on investment
  - Increasing our agility and responsiveness
  - Strategically driving cost avoidance through value-driven decisions
- Value on investment
  - Increasing the quality of our end products
  - Optimizing the health, safety and welfare of our tenants



Learn more about how OBO drives innovation at the Innovation Engine [sites.google.com/fan.gov/innovation-engine/](https://sites.google.com/fan.gov/innovation-engine/)



# Design & Engineering (DE)

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Summary, Divisions, Services, & Programs

**John Pitts (OBO/PDCS/DE)**  
*Office Director (Acting)*



# Design & Engineering (OBO/PDCS/DE)

The **Office of Design and Engineering (OBO/PDCS/DE)** develops and maintains applicable **criteria and guidelines** for **facility design and performance** as well as **technical oversight and support** for projects and posts.





# Design & Engineering (OBO/PDCS/DE) — Divisions

## Divisions

DE provides professional design services to ensure **code compliance and alignment with functional, performative, and security goals** for new construction and existing missions.



Architectural  
Design

Curtis Clay



Design  
Coordination

Eric Mucklow



Interior  
Design

Laura Rogers



Civil/Structural  
Engineering

John Pitts



Electrical/  
Telecom  
Engineering

Dawna Wright



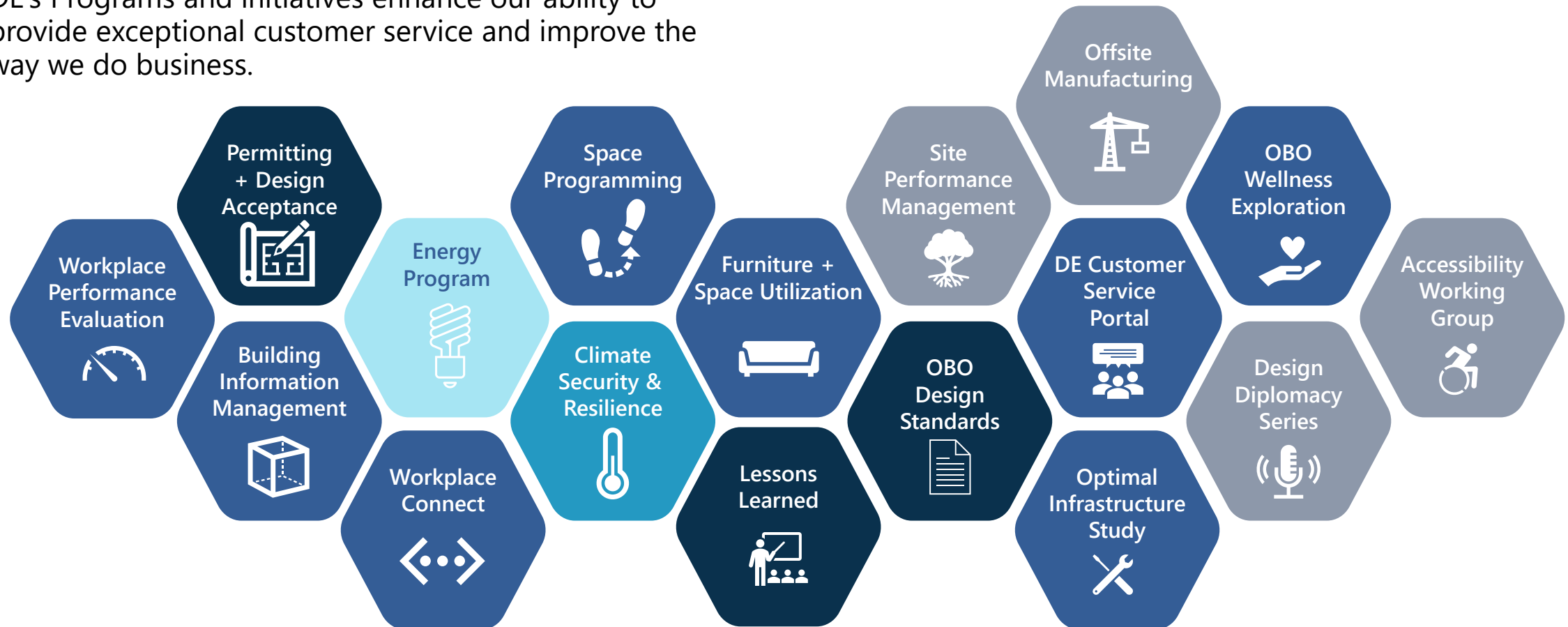
Mechanical  
Engineering

Joe Cafferata

# Design & Engineering (OBO/PDCS/DE) — Programs and Initiatives

## Programs + Initiatives

DE's Programs and initiatives enhance our ability to provide exceptional customer service and improve the way we do business.





# Civil/Structural Engineering

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Summary, Projects, & Initiatives

**John Pitts (OBO/PDCS/DE)**  
*Office Director (Acting)*



# Civil/Structural Engineering (DE/CSE)

CSE oversees the successful implementation of professional **civil, structural, geotechnical, and blast engineering** services and builds an adaptation capacity within its **Climate Security & Resilience (CS&R)** program. We provide technical guidance in planning, design, construction, and maintenance to ensure safe, secure, functional, and resilient diplomatic facilities.

Civil Engineering

Structural Engineering

Geotechnical Engineering

Blast Engineering

Climate Security & Resilience Program

# Climate Security & Resilience - Program History

## NATURAL HAZARDS PROGRAM

Seismic Program expands to include 5 hazards (earthquake, tropical cyclones, tsunamis, geohazards, and flooding)



1982

2005

2020

## SEISMIC FUNCTIONAL PROGRAM

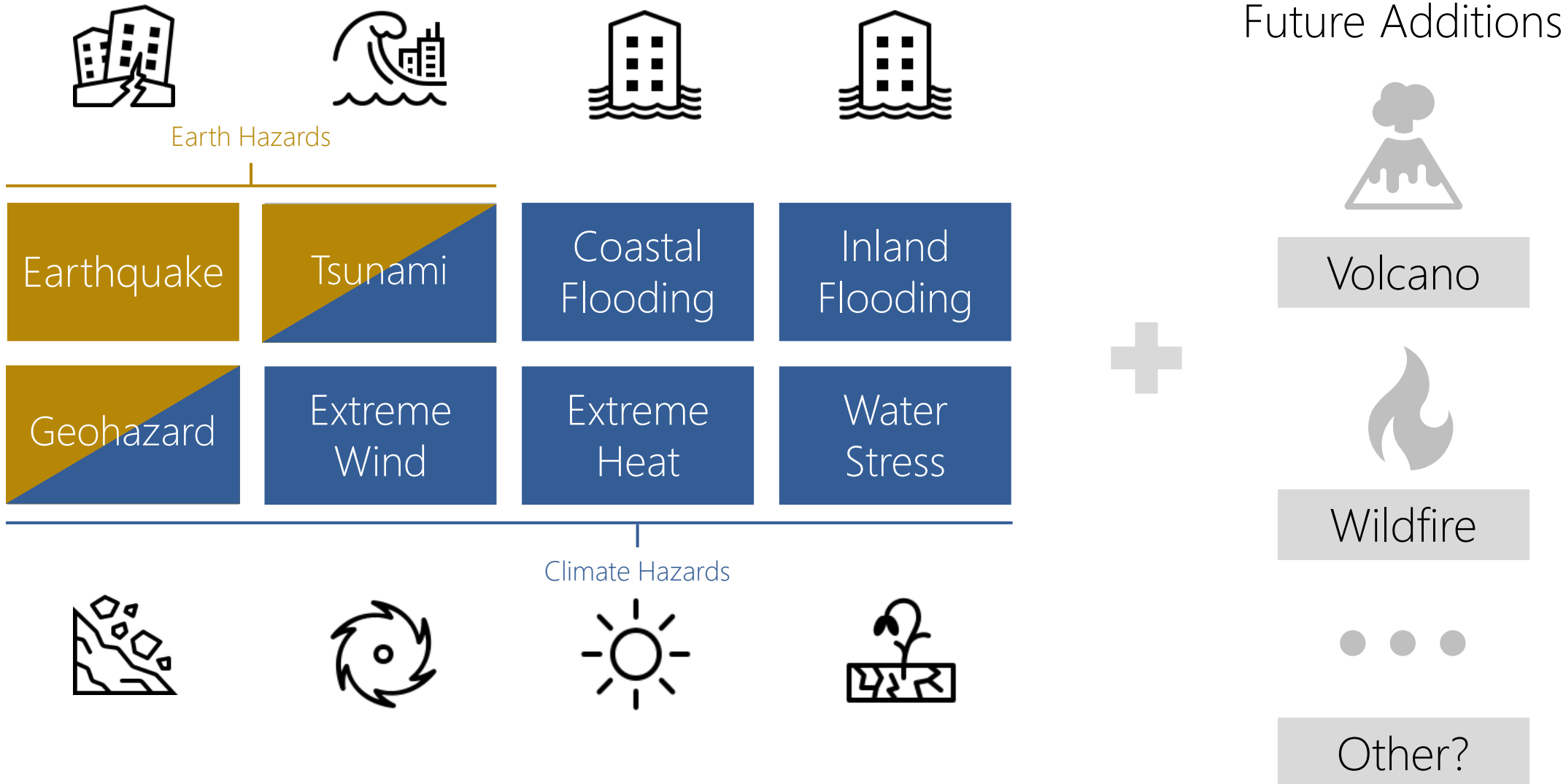
Program founded to standardize how OBO addresses earthquakes in new designs and acquisitions



## CLIMATE SECURITY & RESILIENCE (CS&R) PROGRAM

Created to bring about proactive measures to support post resilience to natural hazard disruptions. Program includes 7+ hazards, inclusive of climate change projections

# Climate Security & Resilience Program



# Civil Structural Engineering (DE/CSE) - Opportunities

## Flood Studies

For all upcoming capital projects as a separate task

## Seismic Screening

In all high seismic areas toward seismically best available

## Blast Analysis

Typically with projects but as needed

## Design Review Support

As needed to maintain project schedules

## Adaptation Planning

NEW – plan for climate adaptation at exposed posts

## Natural Hazards IDIQ

To be renewed with scope in support of CS&R functions.



# Electrical Engineering

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Summary, Projects, & Initiatives

**Dawna Wright (OBO/PDCS/DE/EE)**  
*Division Director*

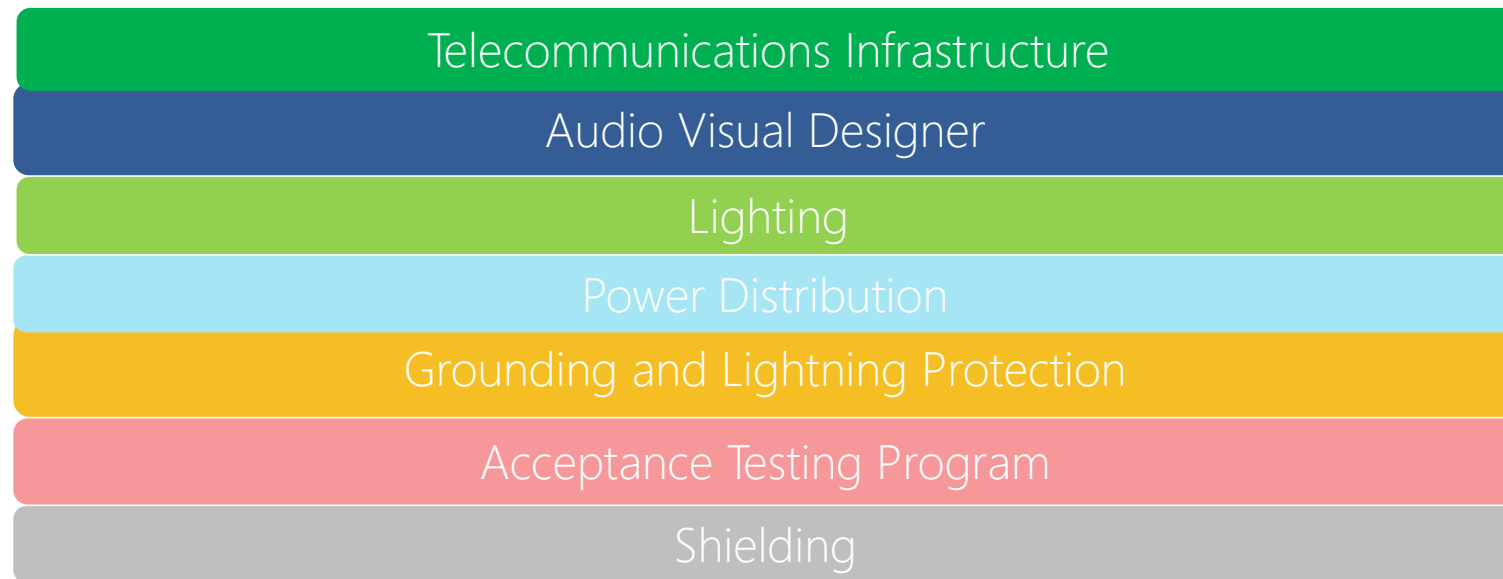


# Electrical Engineering (DE/EE)

## Mission + Organization

### Mission

*The Electrical Engineering Division serves US citizens and diplomatic missions by delivering safe, secure, innovative, and sustainable facility designs through optimizing audio/visual, telecommunications, shielding, power and other technological expertise.*



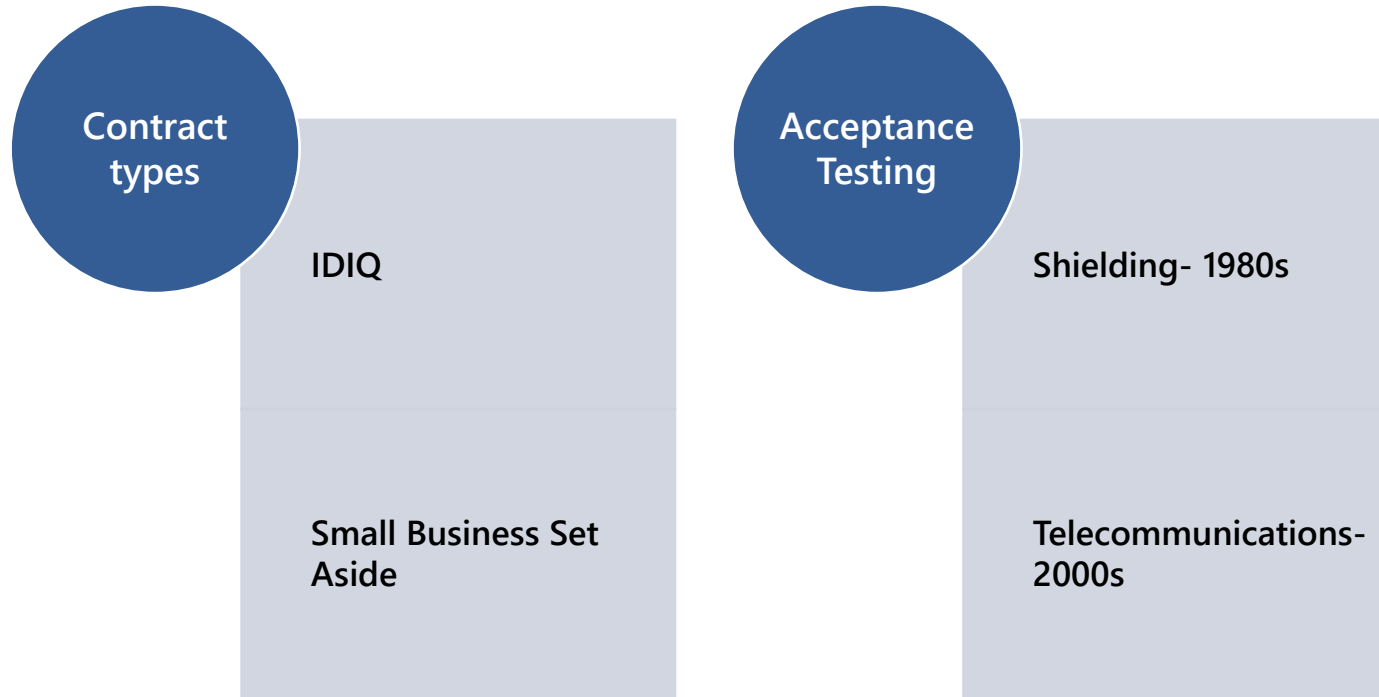
# Electrical Engineering – Areas of Expertise

## License/Professional Certifications

Professional Engineer  
Certified Energy Manager  
Registered Communications Distribution Designer  
BICSI Technician  
Project Management Professional

Certified Technology Specialist  
EMI/EMC  
Acoustics  
Lightning Protection Engineer

# Electrical Engineering (DE/EE) - Acceptance Testing Program



Avg of 8-10 Task Orders  
Annually

Systems Tested:  
Communications, Shielding,  
Audio Visual



# Mechanical Engineering

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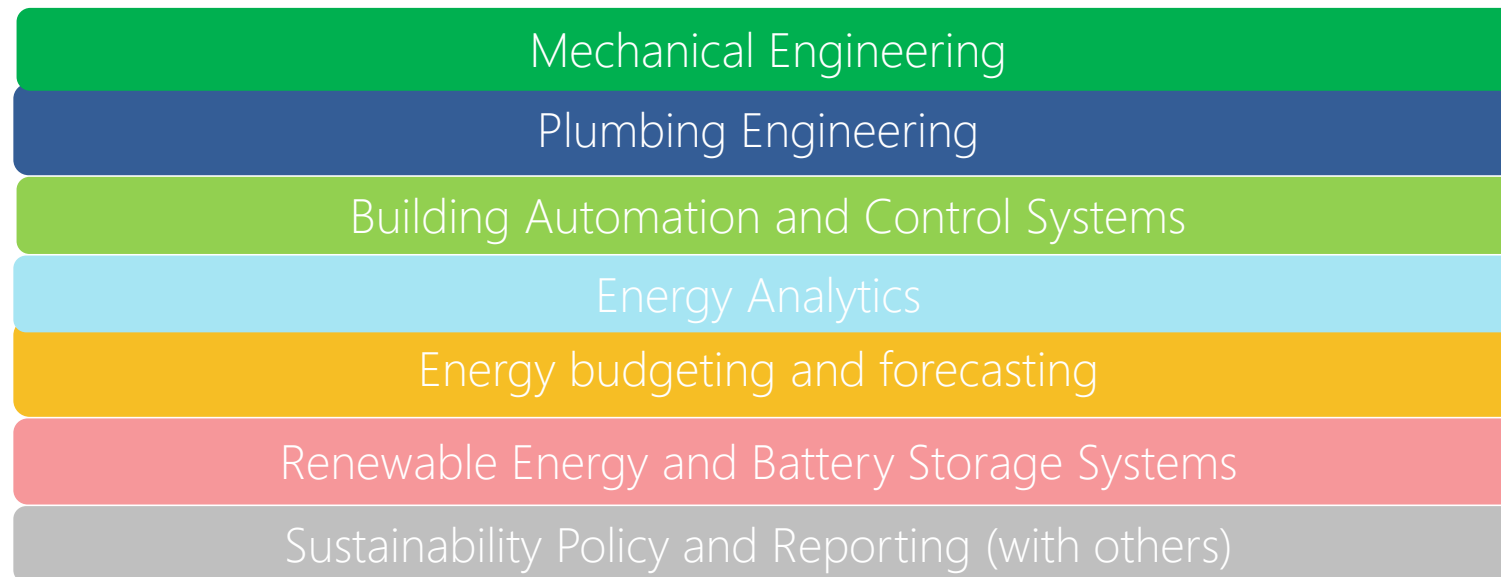
Summary, Projects, & Initiatives

**Joe Cafferata (OBO/PDCS/DE/ME)**  
*Division Director*

# Mechanical Engineering (DE/ME)

## Mission + Organization

*The Mechanical Engineering Division serves US citizens and diplomatic missions by delivering safe, secure, innovative, and sustainable facility designs in heating, ventilation, air conditioning, plumbing, controls, water treatment, energy management including analytics, budgeting, forecasting, and the development of renewable energy systems.*



# Mechanical Engineering (DE/ME) - inside baseball

## Staffing and Organization

### 1. Three nominal branches –

Two regional project and post support groups: mechanical one, mechanical two, one energy management group. Flat organization and these don't exist on paper

### 2. Staffing -

1. Mechanical Engineers – 21
2. Plumbing Specialists – 2
3. Controls Engineers – 3
4. Environmental Engineer(s) – 1
5. Energy Engineers and Analysts – 5
6. Budget Analysts - 3
7. Architect and sustainability strategist – 1

# Mechanical Engineering (DE/ME)

## Project Workload:

### 1. Partnership

Could not do the work without our industry, government, and academic partners and their network(s) of engineers, contractors and manufacturers- together we have done a lot!

### 2. Capital Program - other presentation about the program

1. Assume: code compliant coordinated designs that meet OBO standards
2. Strive: Systems we can operate, maintain, expand and renovate

### 3. Non – Capital Program

1. Renovations, expansions, equipment replacements
2. Renewable energy and Battery Storage Projects
3. Greening Diplomacy Initiative

### 4. Research Partnerships and Studies

1. Corrosion site characterization – Navy Research Laboratory
2. Specific and Relative humidity control
3. Battery Energy Storage Systems and impacts of ASHRAE 90.1 update to the program
4. Embodied Carbon – characterization and way forward

# Energy Program

## Energy Analytics

- Energy and water use tracking and analysis – based on post submission of monthly utility bills
- Post analytics and reporting
- Data based decision making for renewable energy projects and other interventions
- Tariff/utility rate structure and negotiation assistance

## Energy Projects

- Renewable Energy – Photovoltaics and Wind
- Battery Storage System Projects
- MCS dedicated funding- new in FY23
- GDI-OBO Resilience Innovation Fund
- Net Zero Buildings
- EV Fleet Infrastructure
- Audits

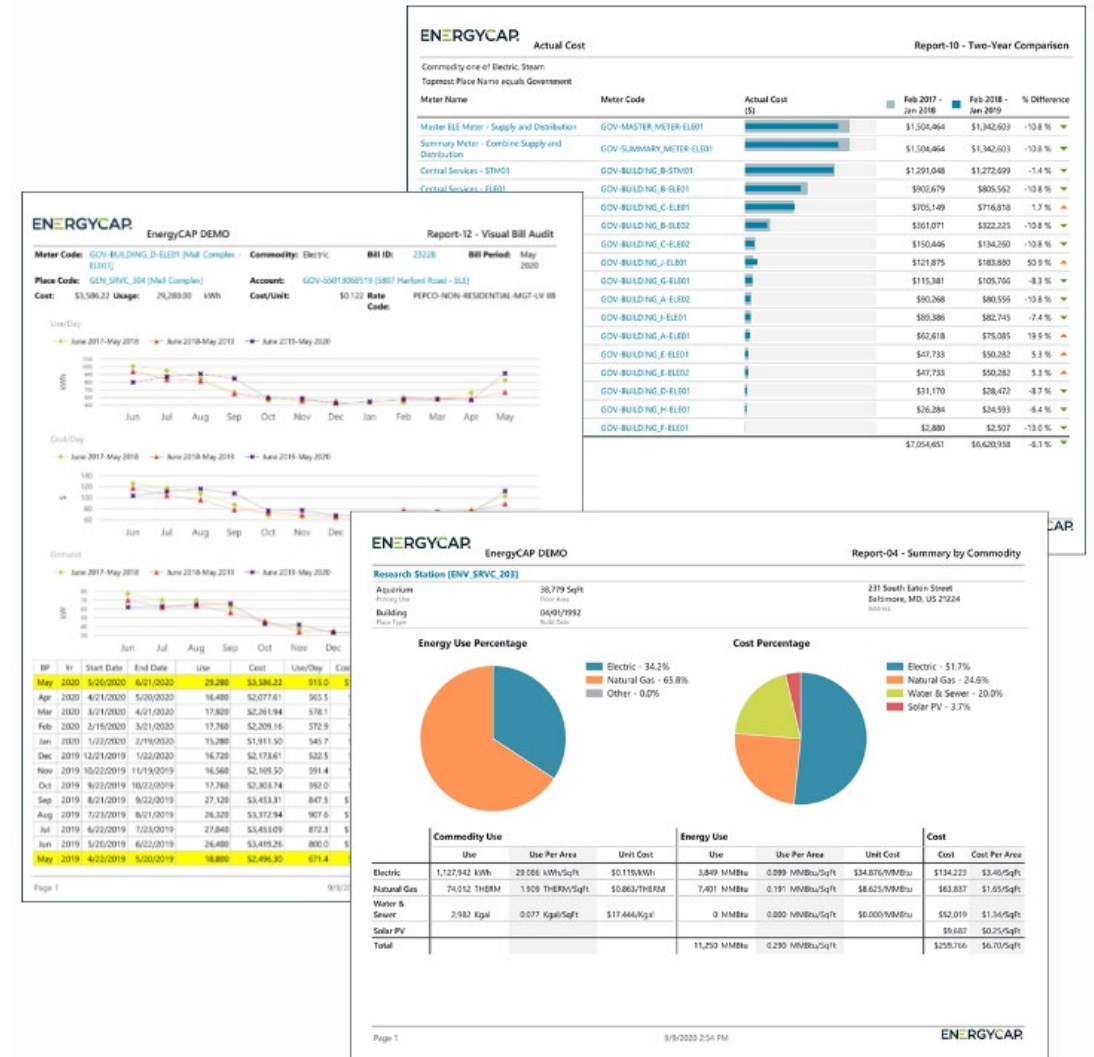
## Energy and Sustainability Policy

## Utility Budgeting and Payment



# Data Driven Decision-Making – Utility Bill Analytics

- [21-STATE-8154 \(EnergyCAP Replacing Trees\)](#)
- Automatic data capture
- Unique bill structures capabilities
- Foreign languages
- Currency conversion
- Weather normalization from international weather stations
- MeterNet data
- Reporting
  - Benchmarking and project prioritization
  - Monitoring project progress



# EnergyCAP System Statistics - April 2023

## 244 Posts Enrolled

**5,591**

Utility Bill Capture  
Enrollments

**71,833**

Bills Captured  
Through OCR

**705**

Vendors

**1,376**

Rate schedules

**423**

Interval Meters

**263**

International  
Weather Stations

**130**

Foreign Currencies

**44**

Foreign Languages

# Renewables at DOS






- **Capital Security Program**
  - New Embassy Compounds
  - New Consulate Compounds
- **OBO Energy Group**
  - Installations at existing facilities

# Renewable System Installations



## Map Legend:

-  3 Installed Wind at 88 kW
-  46 Installed Solar at 10.6 MW
-  42 Planned Solar at 13.7 MW

# Future Net Zero Diplomatic Facilities – Current Construction



## Kolonia

PV Initial Investment	\$2,983,864
System Size	228 kW
PV Payback	22 < years
PV + Battery Lifetime Savings (after payback)	\$683,663

LED Lighting, PV, and Battery Storage total cost = \$3,550,517

## Apia

PV Initial Investment	\$1,462,121
System Size	77 kW
PV Payback	34 < years
PV + Battery Lifetime Savings (after payback)	-\$484,660

LED Lighting, HVAC upgrade and air sealing, PV, and Battery Storage total cost = \$2,486,095

## Majuro

PV Initial Investment	\$ 2,527,421
System Size	169 kW
PV Payback	26 < years
PV + Battery Lifetime Savings (after payback)	-\$170,300

LED Lighting, PV, and Battery Storage total cost = \$2,759,734

# Energy Policy Drivers – Stewardship, Resiliency, and EO 14057

## Executive Order 14057: December 8, 2021

[Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability](#)

- [E.O. 14057 Implementing Instructions \(sustainability.gov\)](#)



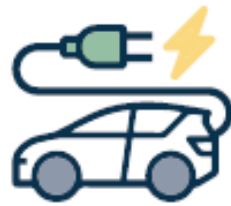
**100% Carbon Pollution-Free Electricity by 2030**

including 50% 24/7 carbon pollution-free electricity



**65% Reduction in Scope 1 and 2 GHGs by 2030**

from 2008 levels



**100% Zero-Emission Vehicle Acquisitions by 2035**

including 100% zero-emission light-duty vehicle acquisitions by 2027



**Net-Zero Emissions Buildings by 2045**

including a 50% emissions reduction by 2032



**Net-Zero Emissions Procurement by 2050**

including a Buy Clean policy



**Climate Resilient Infrastructure and Operations**



**Climate- and Sustainability-Focused Workforce**

# GDI-OBO Resilience Innovation Fund

- **Energy Group partners with M|SS Greening Diplomacy Initiative**
- **Finances innovative post-initiated and managed resiliency and sustainability projects**
  - Energy conservation and efficiency
  - Small-scale renewables
  - Water conservation
  - Waste management
- **\$5M total allocated to 73 awarded projects in all 6 regions**
  - OBO funded (MCI) & Bureau funding partnerships
- **Projects are selected based on:**
  - Use of data to inform scope of project
  - Projected impact and potential to improve resilience at post
  - Executability and consideration for how post will maintain and sustain operations of project over time
  - Lifecycle cost effectiveness
  - **Requirement: 100% compliant on EnergyCAP utility bill submissions**

# Utility Budget Transfer

- **New program – under development – assisted greatly by the OBO Finance Office**
- **Goal is to align the incentives for utility budgeting and funding**
  - OBO funds the renewable energy projects and regional bureaus recoup the investment
- **Transition utility payment for functional properties from the regional bureaus to OBO – all posts.**
- **Mirroring the operational leasing program (rented housing portfolio) – posts will set targets in conjunction with OBO budget analyst and then OBO will AOA the money to post. FY24 is a virtual year and OBO will take over the funding starting in FY25.**








## Q&A


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# Points of Contact

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<b>Joe Cafferata</b>	<b>CafferataJ@state.gov</b>

# Connect With OBO

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 state.gov/OBO     OBO-EA@state.gov

**Working with Us**  
Capabilities Conversation  
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# Connect With SAME

## Interested in Joining?

Become an SAME member and join over 25,000 professionals from across military, government, industry and academia who are working to strengthen national security, support our warfighters and agency partners, and address the nation's facilities, infrastructure, and resilience challenges, together.

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- Grow as a leader through volunteer opportunities at the local, regional and national levels.
- Access 100 years of *The Military Engineer* content in our digital archives.

### For More Information:

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