

# Transportation Resiliency???

We are barely keeping the lights on now



**Gainesville DOT - Traffic Operations**

Emmanuel Posadas, PE, PTOE

ITE/NOCoe TSM&O Peer Exchange

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Author and Presentation

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## Background on the Gainesville

- Area/Region, Demographics
- Our Transportation System
- Our Resources and Partnerships



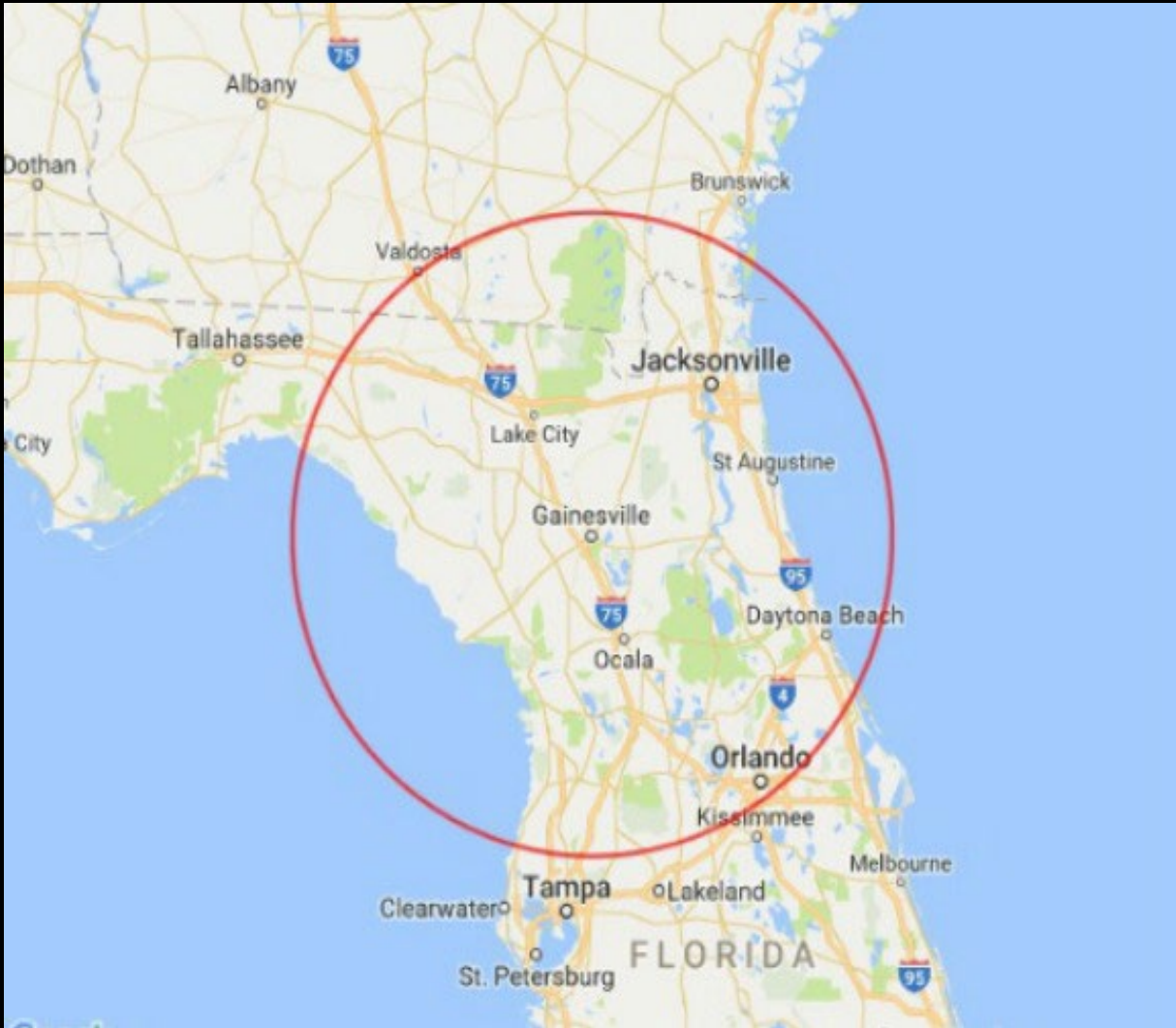
## Challenges and Opportunities

- Human Resiliency
- Financial Resiliency
- Cyber and Physical Resiliency

## Lessons Learned

Plus Pandemic Curveballs

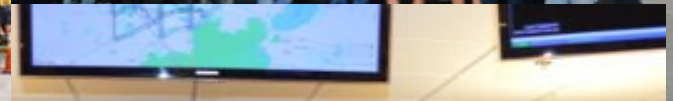
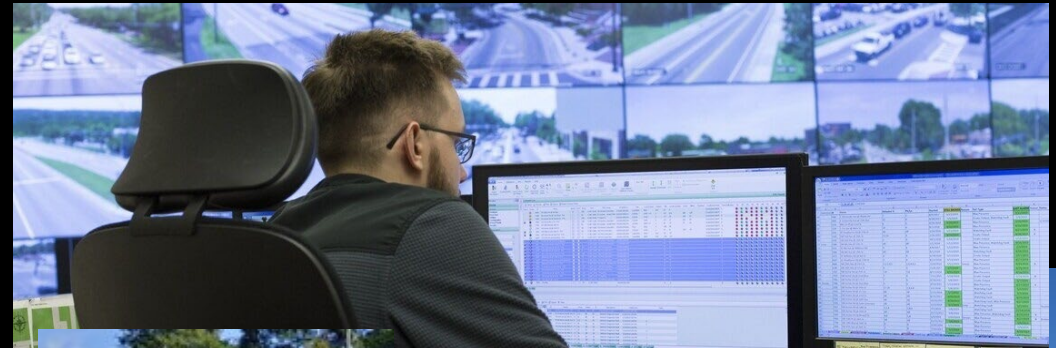
# Area/Region and Demographics



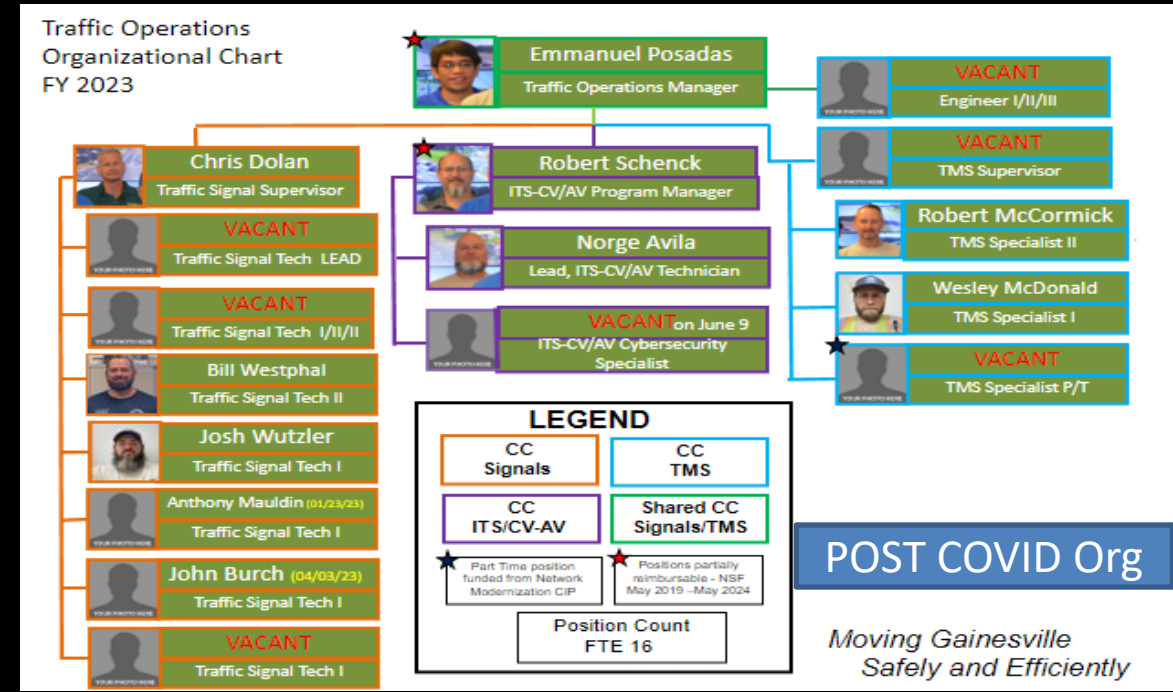
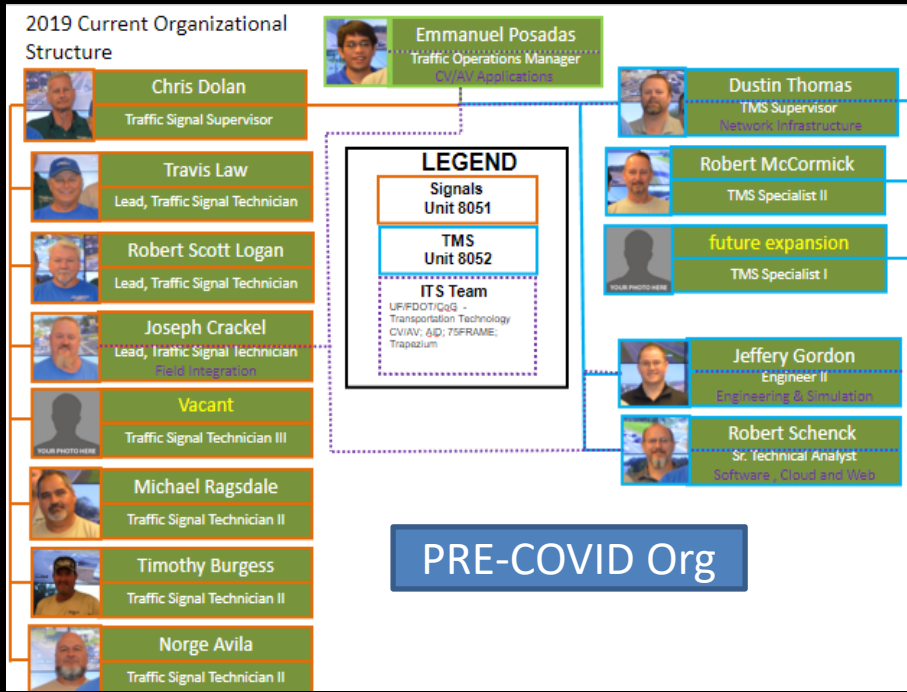
Description	Metric
Population (City Limits)- 153 <sup>rd</sup> MSA	141,085 (2020)
Location	North/Central Florida
Density	2,227 persons per Square Miles
Land Area	64.54 Square Miles
Population (service area-Alachua County)	278,468 (2020)
Density (Service Area)	290 persons per Square Miles
Land Area	869 square miles

# Systems that we maintain

Description	Metric
Traffic Signals	246
Underground Fiber	110 Miles
IP Addressable Network Devices	1,356
Misc. Devices	47 School Zones 52 RRFBs 60+ Beacons and Intersection warning
ITS Devices	271 PTRZ CCTV 52 Fisheye VD 61 Quad Cam VD
Central TMS	Servers and VMs Video Wall L2 and L3 routers and switches



# Resources we have

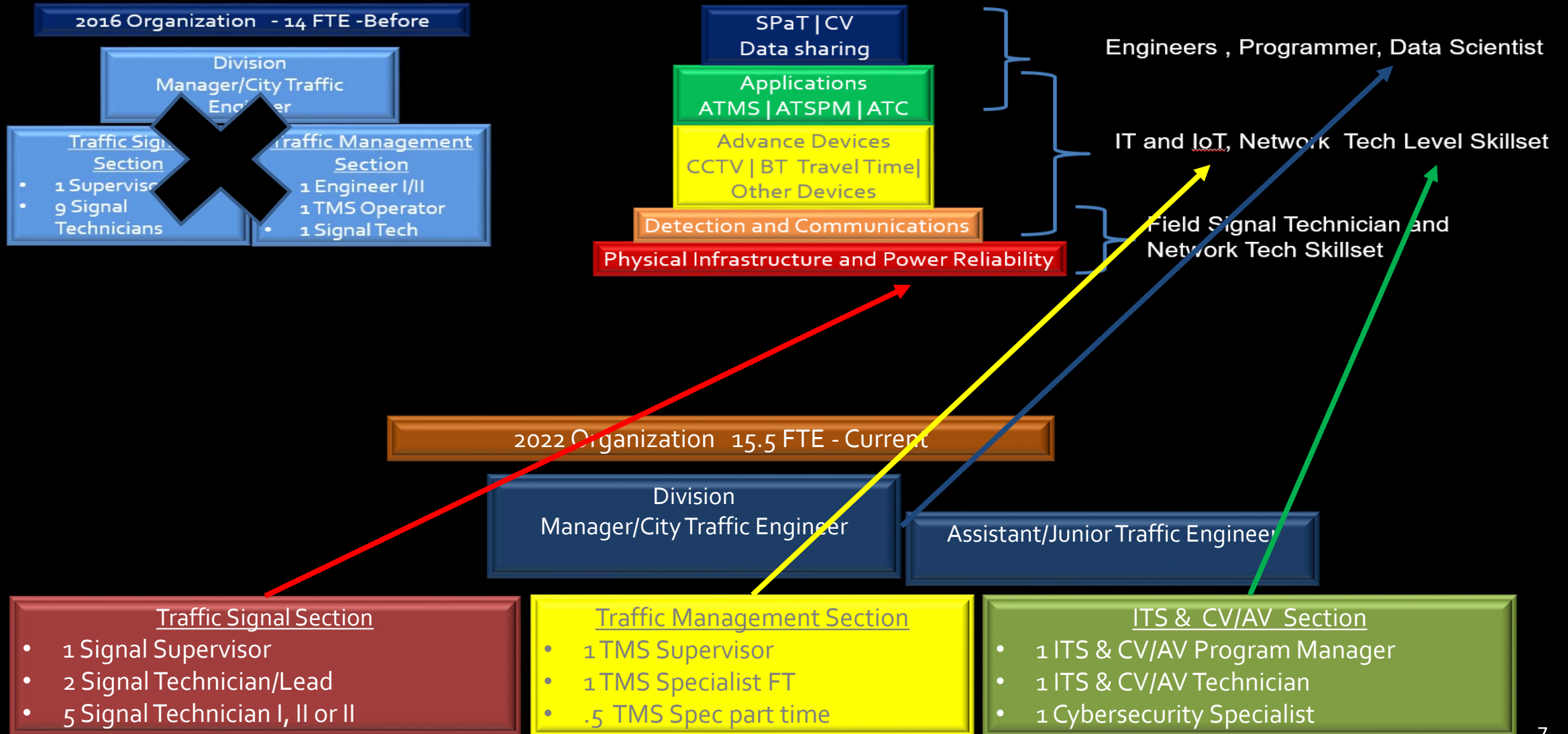


Description	Metric
Annual O&M Budget	\$2.0 to \$2.1M
FTE (Full Time Equivalent Positions)	14 to 16 FTEs (2 Engineers, 4 IT, 8 Signal Techs)

Partners	Why
FDOT	Signals and ITS on State Roads
Alachua County	Signals and ITS on County Roads
University of Florida and LEO (Sherriff, GPD, UFPD, SFPD)	Signals and ITS on University Campus
6 Smaller Cities inside County	Alachua, Archer, Hawthorne, High Springs, Micanopy, Wa!do

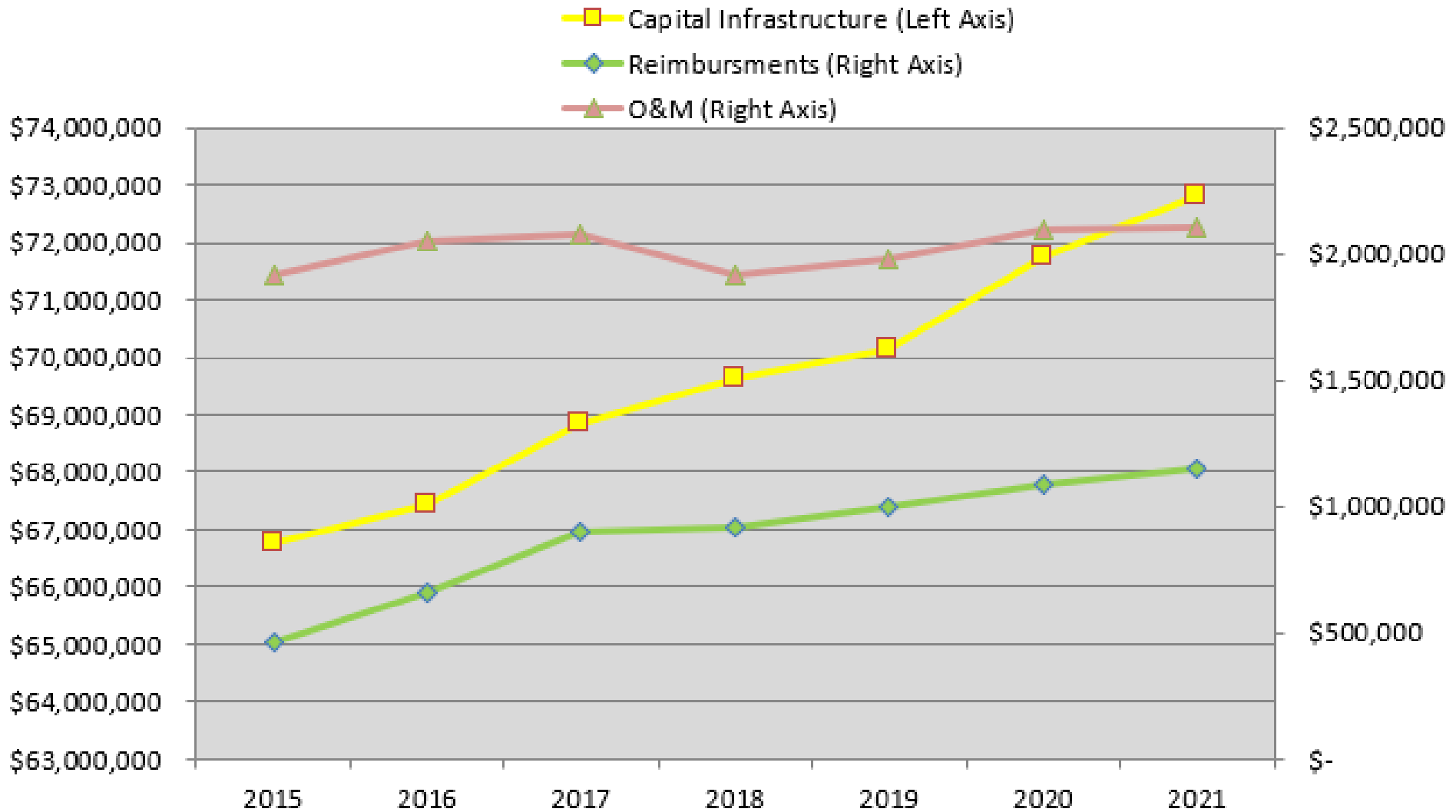
# Challenges and Opportunities

## Human Resiliency through Workforce Development



# Challenges and Opportunities

## Financial Resiliency - Time Series Indexing (or NOT)





# Challenges and Opportunities

## System Resiliency - Cyber & Physical



### Description

Main Server Room with Battery Backup and Industrial Generator

Category 5 Building



# Challenges and Opportunities

## System Resiliency - Cyber & Physical

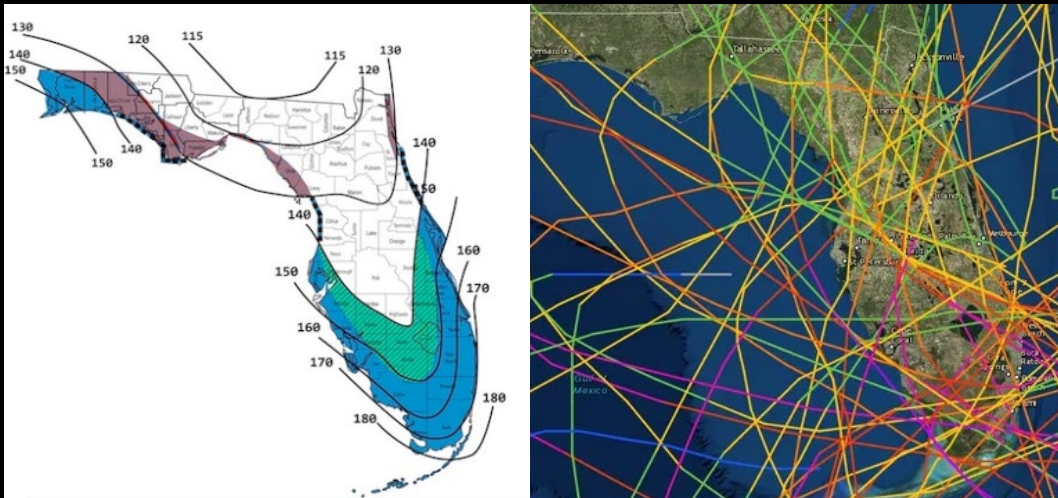
### Description

Separate / Desegregated Network Cores

Disaster Recovery Remote Sites and Cold Storage

VLAN Segregated Networks with Redundancy Connectivity

Use of VM/VS (Virtualization for Servers and Central System)



Florida Wind and Hurricane Tracks



Clear Selections

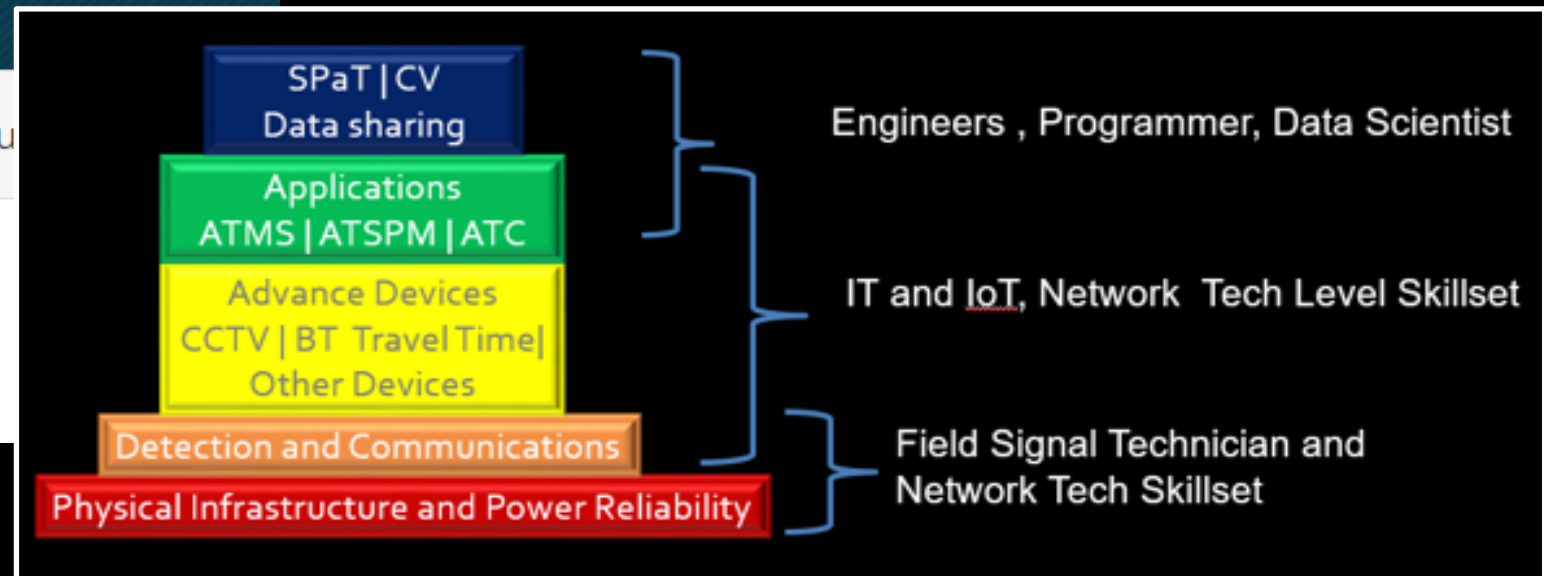
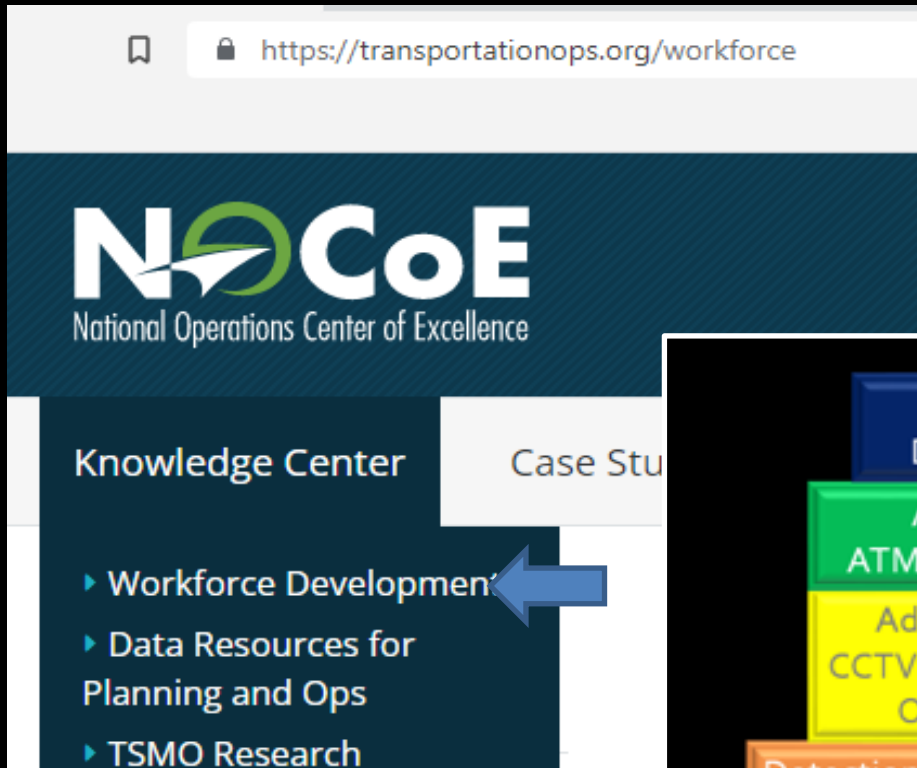
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Showing 1 to 5 of 5 entries (filtered from 1,355 total entries)

Caption	
+ Ft Clarke Fire Station (Core 4)	
+ Parking Garage (Core 2)	
+ RTS (Core)	DR
+ SW 2nd Ave @ 34th St (Core 3)	
+ TMS (Core 1)	Main

# Lessons Learned

People: Workforce Development & Organizational Functions

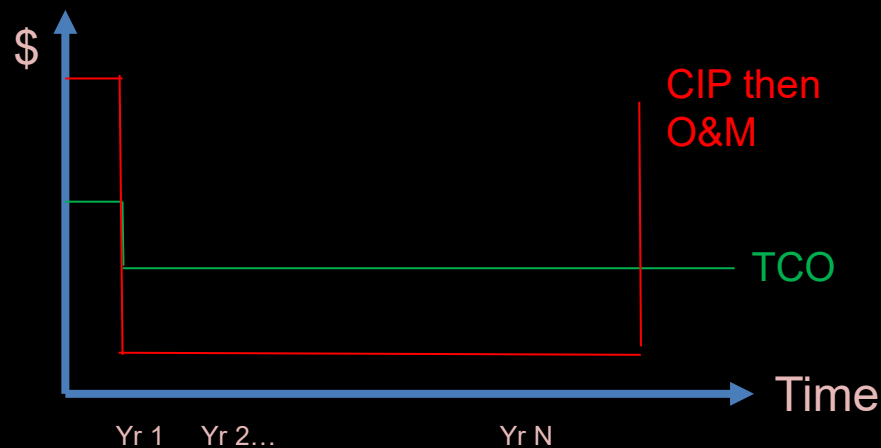


# Lessons Learned

Process: TCO vs CIP & O&M Paradigm ;

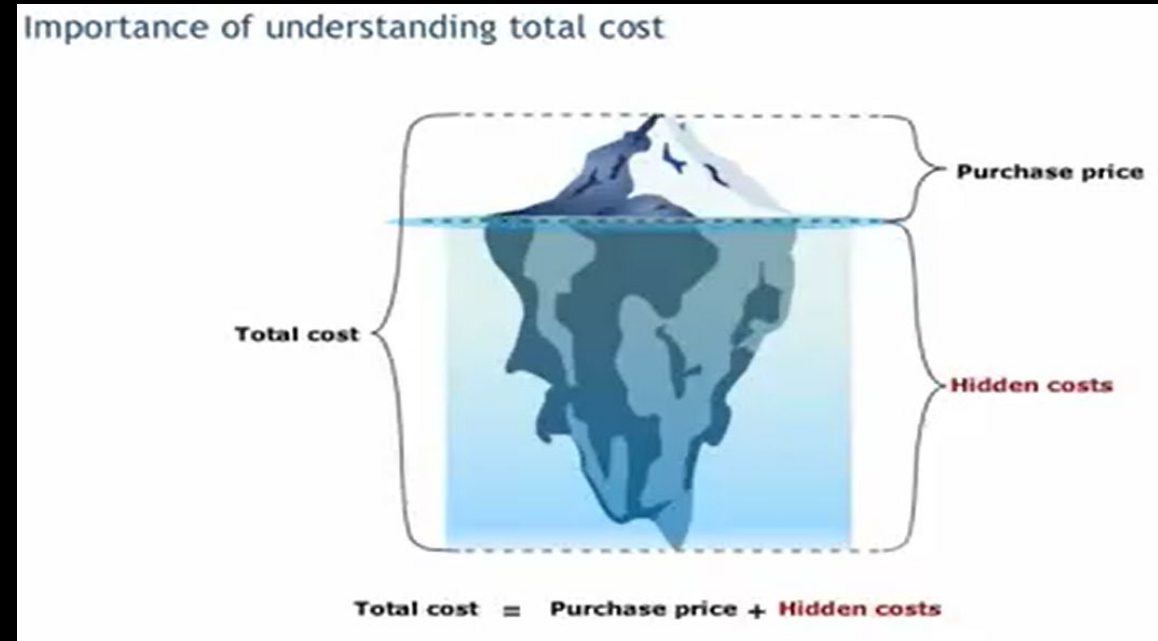
## TCO – Total Cost of Ownership

- Acquisition/Physical Cost
- Operating Cost
  - Materials and Supplies
  - Software and SaaS
- Personnel Cost
  - Training
  - Safety
- Capital recovery (replacement)
  - Examples: Computers/Fleet Replacement
  - 5-10 year lifespan




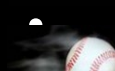


## Initial Capital Infrastructure (CIP) then O&M - Operating and Maintenance

Examples: Civil Infrastructure Projects, Roadways – 20+ year lifespans,



# Lessons Learned

## Other Resiliency Considerations

-  COVID 19 (and the next Pandemic)
-  Network and Cyber Security needs
-  Staffing, retirement, cost of labor, workload and burnout, Succession Planning
-  Industry Consolidation, start-up survivorship, vendor relationships and supply Chain Challenges

### FOCUS:

“Moving All Road users in Gainesville **Safely** and **Efficiently**“

Do we say ...“now and in the future” ?

Logic Model: **INPUT** | **OUTPUT** | **OUTCOME**

**Human & Financial** |→ **Task, Expenditures, Activities** |→ **Mission/Vision/ Values**

# Traffic Operations Challenges



## Talent Challenges

- As people learn we create pathways to move up (or they will move away)

## Finance Challenges (Capital and O&M )

- Capital infrastructure and reimbursements are growing
- O&M Funds are flat or declining

## Other Challenges?

