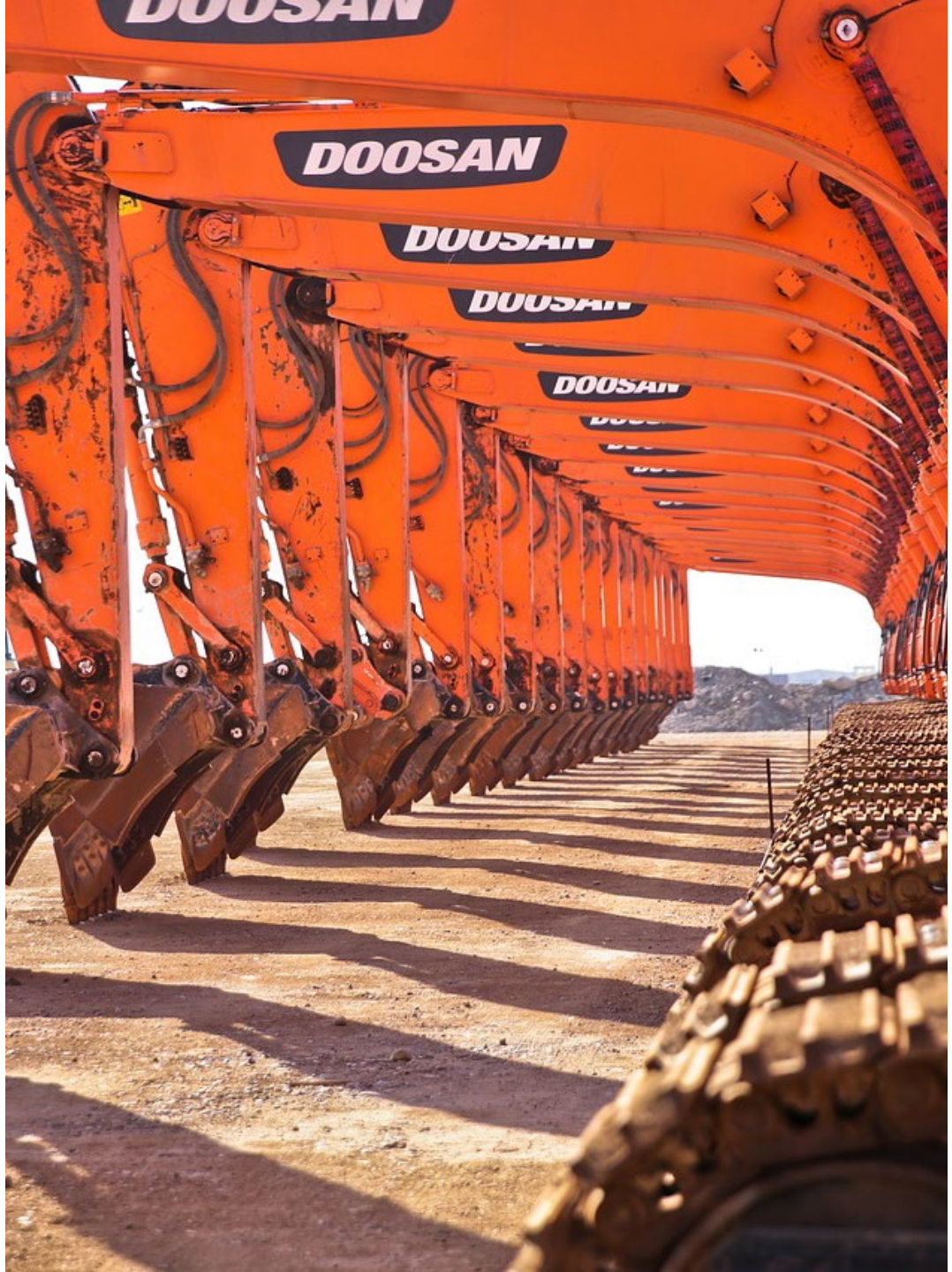
The Novak Consulting Group

A PART OF RAFTELIS

Pinellas County, Florida

Fleet Organizational Assessment and Analysis

September 2, 2021



Agenda

1. Project Purpose and Approach
2. Fleet Management and Fuel Site Assessment
3. Green Fleet/Electrification Impact Assessment
4. Q & A

Project Purpose and Approach

Project Purpose

- Conduct an organizational review to evaluate Fleet Maintenance Division's management, staffing, structure, and processes
- Right-size fuel site locations
- Define the impact and cost benefit considerations associated with fleet electrification

1

Fuel Sites

Identify appropriate number of fuel sites and fleet maintenance sites

2

Staffing and Deployment

Staffing levels, deployment, contracting experience, training/certification profile, and productivity experience

3

Process, Tools and Customer Experience

Use of technology, process, policy, and customer satisfaction

4

Green Fleet Impact Assessment

Financial, Environmental, Operations, and Implementation Considerations

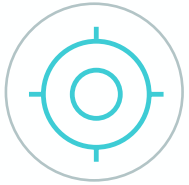
Project Approach

Employee Engagement

Engaged with County leadership, Fleet staff and managers, Fleet customers, and relevant subject matter experts

Data Review & Analysis

Completed extensive analysis of process, workload, and financial data



Best Practices Application

Completed best practice research and related gap analysis to inform analysis and recommendations

Fleet Management & Fuel Site Assessment

Key Findings and Recommendations

22 recommendations in four areas of focus

1. Staffing and Deployment
2. Performance and Data Management
3. Financial Management Practices
4. Fuel Site Assessment

Staffing and Deployment

- Current fleet technician staffing is appropriate
  - 72% average “wrench time” consistent with best practice range
  - Most specialty work has been converted to contracted services
  - Need to increase focus on heavy equipment skill sets
- North Field Services, South GMD, and 46th Street Sub Shops staffed with 1 mechanic at facility (all closed due to pandemic)
  - Presents safety concerns and diminishes Central Fleet Garage labor pool
  - Make closures permanent and reallocate 3 technicians to central fleet labor pool

Performance and Data Management

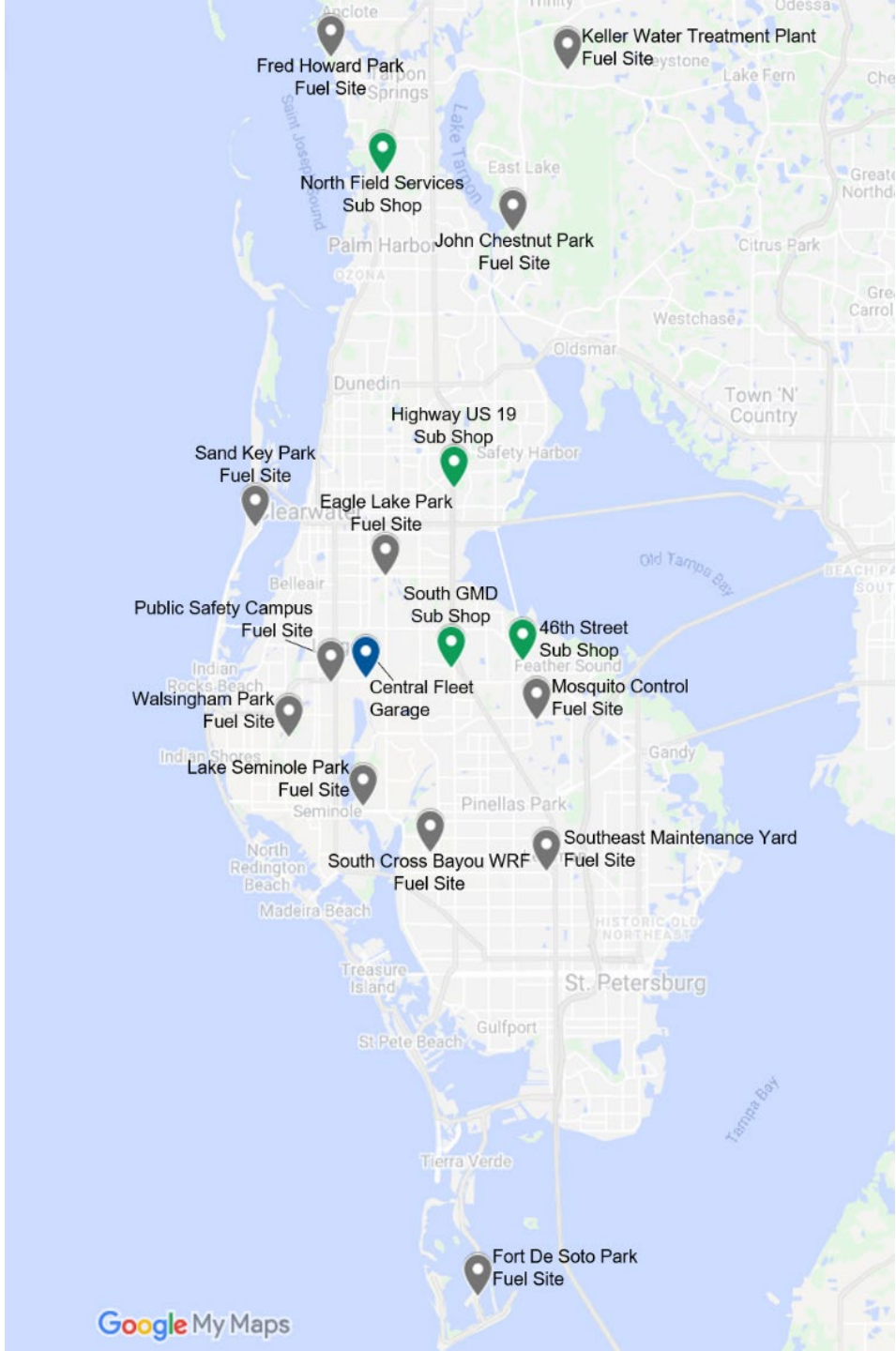
- Three primary issues from customer perspective
  - Cost of service compared to the “$29 oil change”
  - Availability of real time progress reports regarding maintenance status
  - Convenience of PM scheduling
- Update fleet management system with fleet specific business system
  - Build crosswalks with CityWorks for asset management
- Establish regular performance reports and meetings with fleet customers

Financial Management

- Current direct billing process has limited utility
  - Potential benefits regarding fleet utilization analysis are not being realized
  - Simplify the billing process
    - Fully capture indirect cost in labor rate
    - Transition to lump sum cost allocations to departments based on Vehicle Equivalent Units (VEU)
  - Potential to generate labor efficiency
- Significant facility investment needs at Central Fleet Garage
  - Upgrade costs need to be reflected in billing approach or addressed through one-time General Fund subsidy

Fuel Site Assessment

- 17 fuel sites, 5 beyond useful life
- Many sites are within a few miles of each other
- Eliminating 11 fuel sites and developing a fuel card program will maintain service level and reduce cost
  - Consolidate Central Garage and Sheriff's Headquarters site
  - Maintain Highway 19 fuel site and Northfield Services
  - Maintain 3 park-based sites due to geographic isolation



Green Fleet Impact Assessment

Focus and Approach

Define the impact of converting County Internal Combustion Engines (ICE) vehicles to Electric Vehicles (EV)

1

Financial Impact

Define the operating and capital cost implications of fleet electrification

2

Environmental Impact

Estimate the impact of vehicle electrification on vehicle CO2 emissions

3

Implementation Considerations

Define an implementation approach that reflects operating needs and service delivery goals

4

Cost Benefit & Policy Deliberation

Provide a complete picture of EV conversion implications to inform policy and investment discussions

Market Context and Fleet Overview

EV Market Context

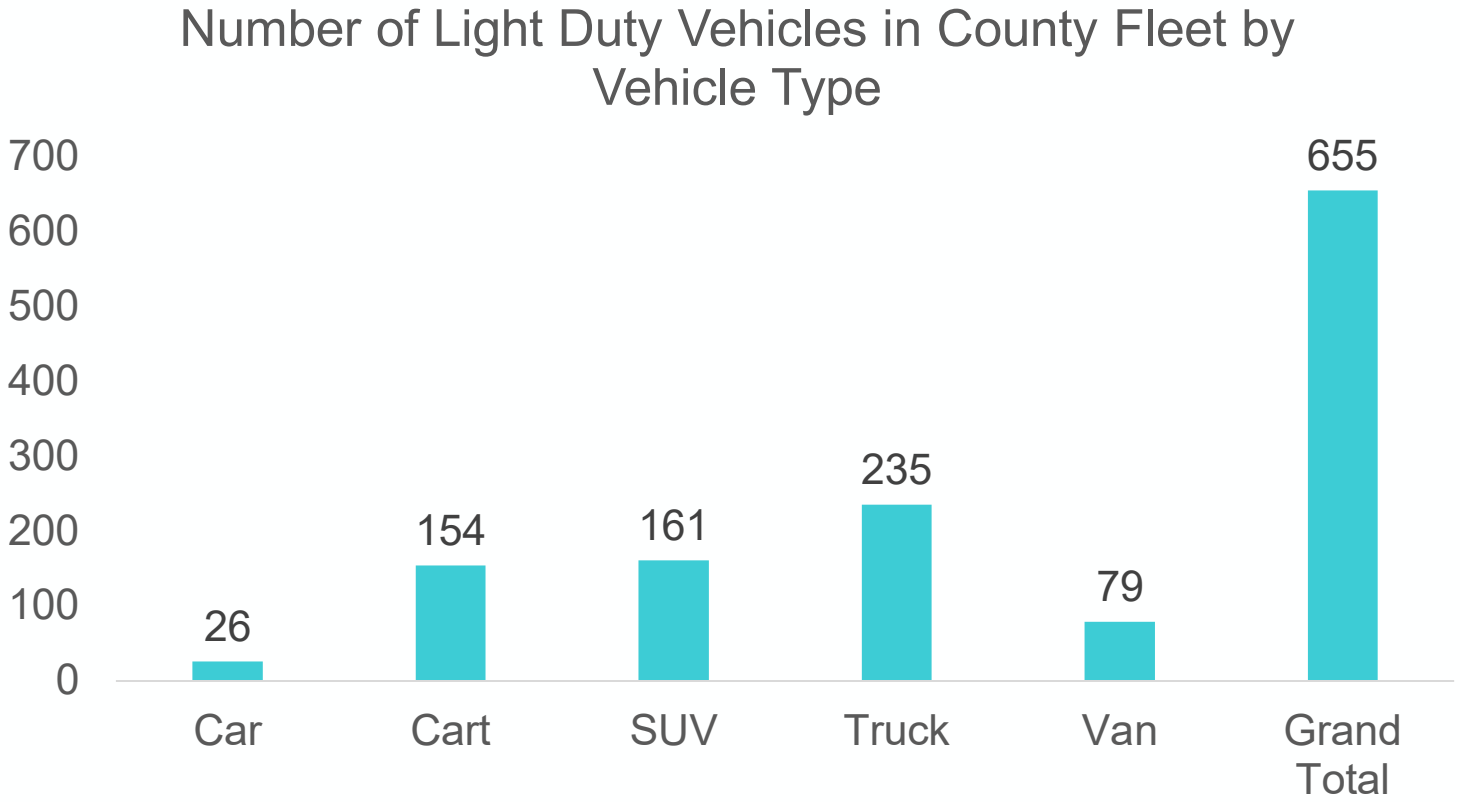
- Relatively new market with limited historical data
- EV Market to date has centered around compact cars and sedans; now moving to vans and light duty trucks (sub ¾ ton)
- Though historical data is limited, there are sufficient studies to draw reasonable conclusions regarding financial, operating, and environmental impact relevant to light duty vehicles
  - Passenger cars, vans, SUVs, and light duty pick up trucks
- Heavy equipment market is not sufficiently mature to develop an implementation plan

EV Market Context

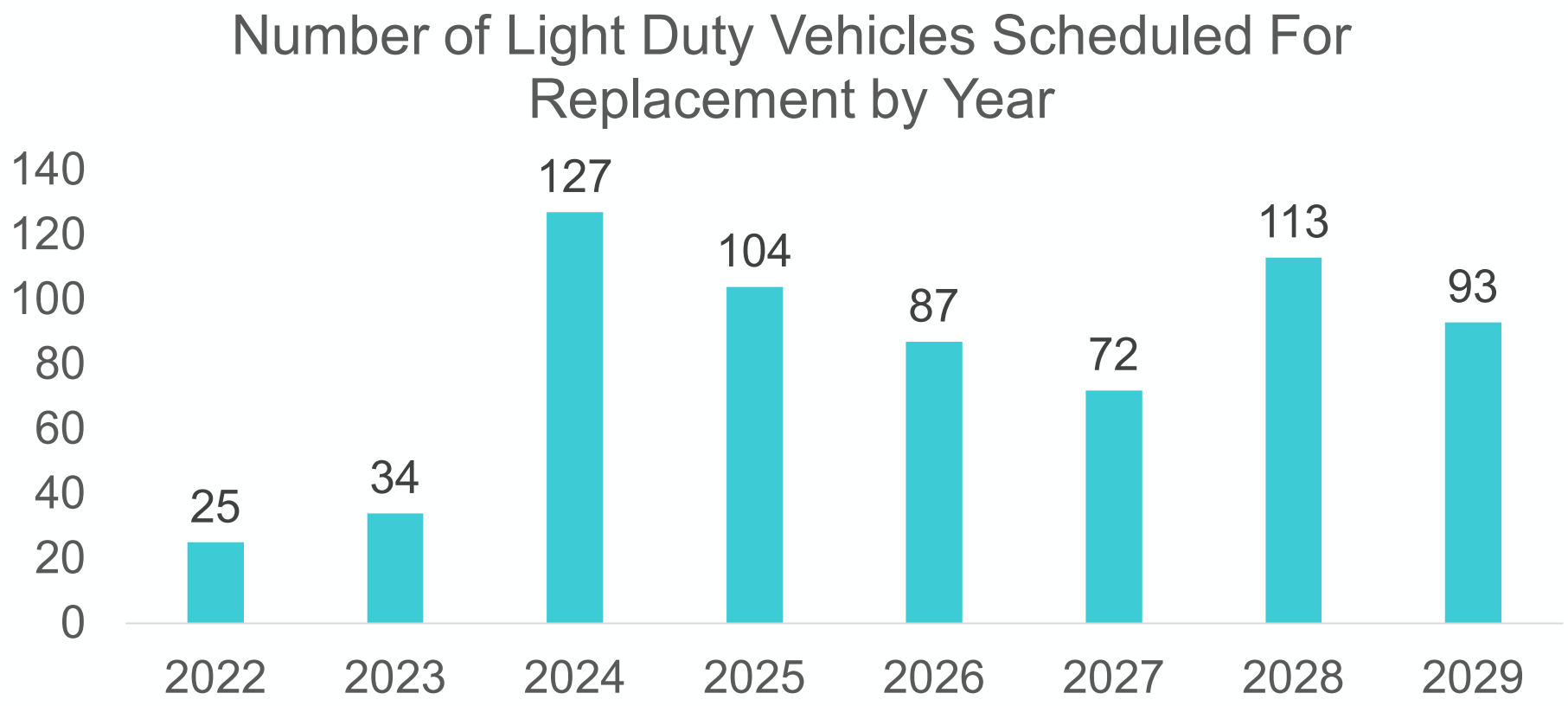
- Focus on light duty vehicles in the County Fleet
  - Advances EV conversion goals with relatively tested technology
  - Provides immediate opportunities for electrification
  - Builds organizational capacity to manage EV fleet
  - Positions County to take advantage of new technology quickly as products and markets mature

Current Fleet Overview

- 1,962 Total Units
- 954 Vehicles
- 655 Light-duty Vehicles
- 501 Light-duty Vehicles excluding utility carts



Current Fleet Overview



Financial Impact Assessment

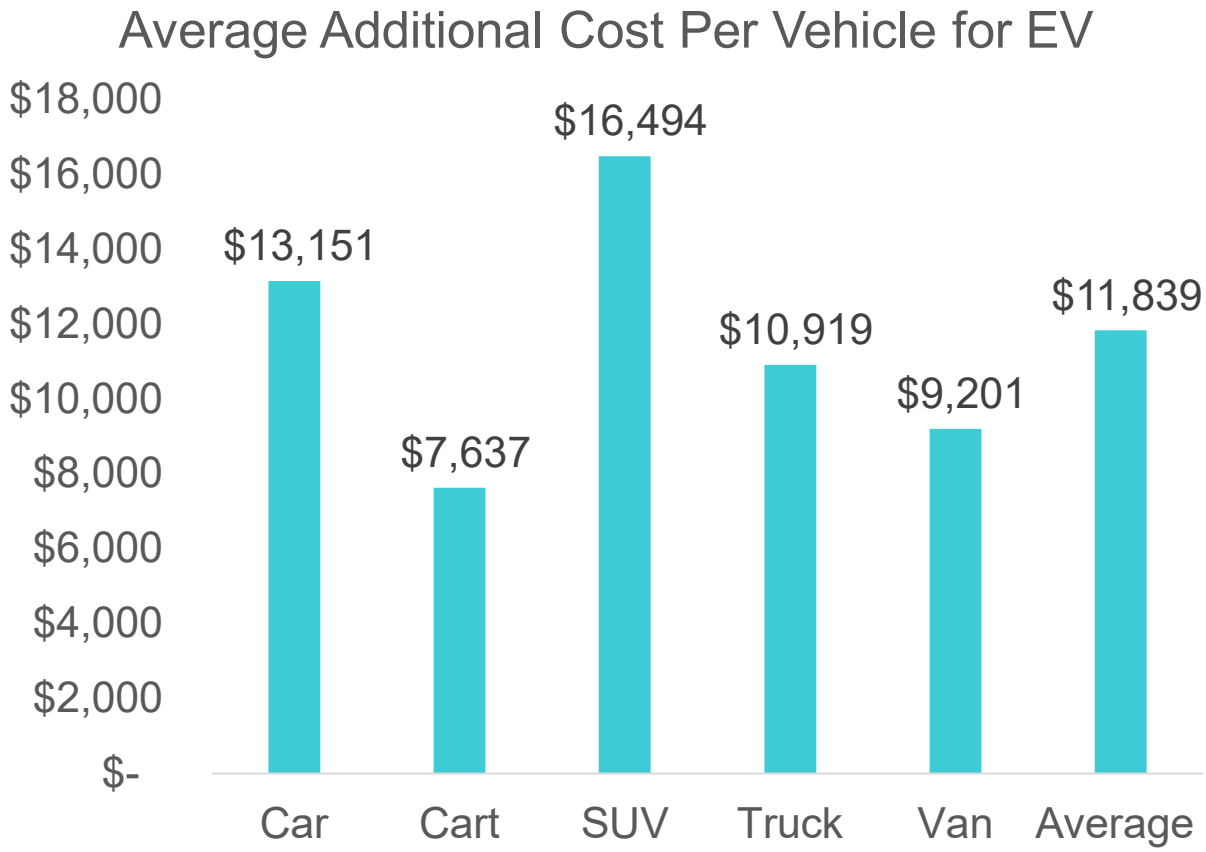
Vehicle Purchase Price

Estimated Cost Impact

- $7.8 million in new expense for 655 vehicles

Caveats

- As EV market matures, purchase price will likely decline
- Vehicle utilization discussions could also reduce purchase cost
  - (e.g., replace SUV with compact car, **IF** operationally feasible)
- Potential availability of cooperative purchasing discounts could reduce cost



Fuel/Energy Cost

Estimated Cost Impact

- Cost of gasoline/diesel fuel will be offset by cost of electricity
- U.S. Department of Energy cost calculator for EV conversion in Florida indicates a 43% reduction in energy expense
- $343,849 annual fuel expense in 2020 for ICE light duty vehicles
- $147,855 estimated annual energy expense for electric light duty vehicles
- Total annual energy savings of $195,994

Caveats

- Electricity cost will vary based on specific rates, usage, peak and non-peak charging practices

Parts Cost

Estimated Cost Impact

- Electric vehicles are more mechanically simple than ICE vehicles
- Significant reduction in parts expense
- Conservative estimates from Consumer Reports estimate 50% or more reduction in parts cost
- Total estimated annual parts savings of $75,000 per year based on average annual parts cost of current ICE light-duty vehicles

Maintenance Cost

Estimated Cost Impact

- European Union has greater duration of experience with EV maintenance environment
- Survey of European auto dealerships indicates an average 40% reduction in annual labor hours required for EV maintenance compared to ICE
- Fleet currently staffs 3 light duty mechanics which is minimum required for coverage
- EV implementation will generate mechanic capacity equivalent to 2,000 labor hours or $93,000 over 10-year implementation period

Charging Infrastructure

Level	Specifications	Time to Charge	Typical Use	Unit Cost Range
Level 1 Charging	15 to 20-amp breaker on a 120-volt AC circuit.	8-12 hours to fully charge	Slow charging, comparable to a household wall plug . Used by EV owners at home.	$300-$1,500
Level 2 Charging	40 to 100-amp breaker on a 208 or 240-volt AC circuit	3-4 hours	Medium charging, used for both home or commercial service. Common in workplaces.	$400-$6,500
Level 3 or DC Fast Charging	60-amp or higher breaker on a 480-volt or higher three-phase circuit	30-45 minutes	Rapid charging, associated with commercial charging stations.	$10,000-$40,000

Charging Infrastructure

Estimated Cost Impact

- Vehicle duty cycle – daily number of miles driven per vehicle – will accommodate level 1 charging
- Level 2 charging necessary during disaster events
- Charging infrastructure must accommodate all vehicles being charged simultaneously to avoid operations/service disruptions
- 501 charging terminals required (excludes utility carts)
- Need balance of Level 1 and Level 2 charging infrastructure
- Estimated charging terminal cost of $2 million
  - Assumes 50% split of level 1 and level 2 charging terminals

Facility Electrical Service

Estimated Cost Impact

- Electrical upgrades required to accommodate 208-volt service
- Represents a potentially significant capital expense at relevant facilities
- Cost must be evaluated on a per facility basis for 6 main facilities and all ancillary facilities
  1. 142 Avenue – Utilities
  2. Highway 19 – DPW
  3. 126th Street – DPW/Stormwater
  4. Downtown Clearwater
  5. Dunn Street
  6. Fleet Headquarters

Disaster Response Capacity

Estimated Cost Impact

- Critical to maintain power supply to vehicles during disaster events
- Mobile charging infrastructure is an emerging technology
- Tow behind diesel powered generators provide best immediate alternative
- 500kw generator will support approximately 50 EV at level 2 charging
- Estimated cost of $180,000 per generator, per cooperative purchasing agreement
- $1.1 million to accommodate 6 main operations/admin. facilities
  - Additional expense for ancillary facilities

Summary of Financial Impact

- **Vehicle Purchase Cost – $7.8 million or an average of $784,000 per year**
  - Vehicle Replacement Fund (VRF) contributions to increase proportionally
  - Costs may decline as market matures
- **Operating Cost – $363,994 in annual savings**
  - Fuel/Energy savings - $195,994 savings
  - Parts savings - $75,000 savings
  - Maintenance cost – 2,000 hours in increased labor capacity or $93,000
- **Capital Cost – $3.1 million amortized over 10 years at 2.0% for $342,000 per year in annual debt service expense**
  - Charging stations - $2 million
  - Facility electrical service upgrades – TBD
  - Emergency generators/disaster preparedness - $1.1 million
- **Net Annual Cost Increase – Average of $762,000 per year in new expense**

Environmental Impact Assessment

Environmental Impact

- Light duty fleet emits approximately 1,761 U.S. tons of CO2 into the atmosphere annually, based on EPA emission formulas
- Pinellas County power supply is generated through coal fired plants
  - Negates some CO2 reduction advantage of EV use
- Fully loaded environmental impact
  - Use related CO2 emissions – 65% reduction
  - Manufacturing related CO2 emissions – 18% increase
  - End of life impact/decommissioning – 21% increase
- Average total impact for mid-size vehicles – 23% reduction or 405 U.S. tons of CO2 emissions per year when conversion is complete
- Annualized Total Cost of $188,000 per 100 U.S. Tons of CO2 Emissions Reduced

Implementation Considerations

Implementation Approach

- Initiate small scale conversions over two-year period
  - Up to 59 conversions by Year 2 across multiple sites based on current replacement cycle
  - Focus on level 1 charging stations that can be supported with current facilities
- Complete facility needs assessment and fund/complete facility upgrades by close of year 2
  - Capital/Infrastructure investment must drive EV conversation pace
- Build initial charging infrastructure to support departments that do not have a direct role in disaster response
- Expand infrastructure to include all light-duty vehicles and disaster response departments as technology evolves and cost benefit assessments support

Cost Benefit Metrics/Considerations

- Monitor Key Performance Indicators to assess cost benefit as dynamic technology and market evolves:
  - Annualized Savings/(Cost) per 100 U.S. Tons of CO2 Emissions Reduced (Absolute and Percent Change)
  - Ratio of ICE Purchase Price to EV Purchase Price by Vehicle Type/Class
  - Estimated Percent of U.S. Tons of CO2 Emissions per Vehicle Converted from ICE to EV
  - Percent Increase/Decrease in Fuel/Energy Cost per Vehicle
  - Percent Increase/Decrease in Annualized Capital Expense for Charging Infrastructure by Type
- Inform policy deliberation and implementation discussions

Final Thoughts

- There is a cost to EV implementation but some environmental benefit as well
  - Cost will likely decline over time
- Immediate conversation opportunities exist but infrastructure development must drive the conversion process
- Protect disaster response capacity
- Suggested implementation approach builds institutional capacity for EV implementation
- Policy decision – does cost/benefit support EV implementation?


Q&A