Agenda

Welcome & Introductions
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Electric Vehicle Trends and Statistics
Preliminary Charging Location Analysis
Vision & Goals
Next Steps
Welcome & Introduction
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City Team

Bill Eger
City of Alexandria
Energy Manager
Bill.Eger@alexandriava.gov

Megan Oleynik
City of Alexandria
Transportation Planner
Megan.Oleynik@alexandriava.gov

Jennifer Slesinger
City of Alexandria
Principal Planner
Jennifer.Slesinger@alexandriava.gov

Consultant Team

Geoff Morrison
Cadmus
Senior Associate
Geoffrey.Morrison@cadmusgroup.com

James Schroll
Cadmus
Associate
James.Schroll@cadmusgroup.com

Elise Emil
Cadmus
Analyst
Elise.Emil@cadmusgroup.com
Project Overview
Related Plans & Initiatives

Environmental Action Plan
Adopted in July 2019

- City Fleet Electrification
- DASH Fleet Electrification
- School Bus Electrification

Alexandria Mobility Plan
Anticipated completion in late 2020/early 2021

- Parking Technology
- Mobility Hubs
- Curbspace Management
Project Description

Purpose
Create roadmap that establishes vision, goals, and strategies for deploying EV infrastructure for residents, workforce members, and visitors in Alexandria.

Development Timeline
February 2020 to July 2020

Release of Report
Summer-Fall 2020
## Public Input Opportunities

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Objective</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Virtual Meeting: Charging Needs Assessment</strong></td>
<td>• Introduce project</td>
<td>April 17th</td>
</tr>
<tr>
<td></td>
<td>• Level-set electric vehicle knowledge</td>
<td></td>
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<tr>
<td></td>
<td>• Describe goals and vision</td>
<td></td>
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<tr>
<td><strong>Public Feedback: Charging Needs Assessment</strong></td>
<td>• Receive public input on charging needs in City of Alexandria</td>
<td>May</td>
</tr>
<tr>
<td><strong>Public Engagement: Draft Report</strong></td>
<td>• Receive public input on draft <em>Electric Vehicle Infrastructure Readiness Strategy</em></td>
<td>July</td>
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Electric Vehicle Trends and Stats
Emissions Equivalency in MPG

Driving an EV in Alexandria produces the equivalent greenhouse gas emissions as driving a 85 MPG car. This will continue to improve into as the grid moves towards renewables.

Through smart deployment of chargers, the City of Alexandria will shift adoption from the blue dotted line to the orange dashed line.
Types of Chargers

Three main types of chargers used in most municipalities.

Level 1 - 110V
- NEMA 5-15
- 6-22 hours to full charge
- Personal use

Level 2 - 208V–240V
- NEMA 14-50
- 2-8 hours to full charge
- Personal & commercial use
- May require service upgrade

Level 3 - 480V
- DC fast charging
- 40 min to full charge
- Commercial use

Can also be hardwired.


Three main categories of chargers. Level 1 are least expensive. Level 2 tend to cost $1,000-$5,000. Level 3 (or fast chargers) are $45-$150K.
Where to Install Chargers

Most people think in terms of the “charging pyramid” (i.e., priority should be home, work, public, fast charge)
# Considerations when Installing Chargers

<table>
<thead>
<tr>
<th>Topic</th>
<th>Key Question</th>
<th>Possible Answers</th>
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</thead>
<tbody>
<tr>
<td>Station user</td>
<td>Who is the targeted user of the station?</td>
<td>Employee, resident of multi-family dwelling, tourist, commuter</td>
</tr>
<tr>
<td>Dwell time</td>
<td>How long will users stay at the charging location?</td>
<td>15 min to many hours</td>
</tr>
<tr>
<td>Site host for station</td>
<td>Who will be the site host?</td>
<td>City property, business park, private garage, commercial property</td>
</tr>
<tr>
<td>Owner-operator</td>
<td>Who will own the station?</td>
<td>City property, business park, private garage, commercial property</td>
</tr>
<tr>
<td>Charger type</td>
<td>What type of charger?</td>
<td>Level 1, 2, or 3</td>
</tr>
<tr>
<td>Plugs per site</td>
<td>How many plugs per site?</td>
<td>1-4 is common in public and workplaces</td>
</tr>
<tr>
<td>Parking enforcement</td>
<td>How to ensure turnover of parking spot? How to ensure gasoline vehicles do not use spot?</td>
<td>Pricing or penalties, signage, law enforcement</td>
</tr>
</tbody>
</table>
Snapshot of Alexandria

Alexandria leads other parts of the country in EV deployment. Teslas account for 40% of vehicles.

522 EVs
Plug-in electric vehicles in Alexandria as of 2020 (57% are BEVs)

6%
New cars in 2019 in Alexandria are electric vehicles, compared to ~1% nationally

- Tesla Model 3: 25%
- Tesla Model S: 15%
- Ford Energi: 10%
- Toyota Prime: 10%
- Nissan Leaf: 9%
- Chevrolet Volt: 6%
- BMW i3: 6%
- Chrysler Pacifica: 4%
- Chevrolet Bolt: 3%
- Other: 12%

CADMUS
Charging Stations in Alexandria

Alexandria has higher EV and charger deployment than DC and US average

Fast Chargers
1 public station (1 plug)

Public Level 2
22 public station plazas (54 plugs), primarily in Eisenhower East and Old Town.

*According to NREL’s EVI-Pro tool, https://afdc.energy.gov/evi-pro-lite
Existing Charging Infrastructure

Map of existing EV charging infrastructure with block groups in Alexandria
Summary Statistics
Alexandria-Arlington-DC Statistical Area

2 adults with kids
Most common household composition of EV owners in region.

8,810
Miles per Year for EV Drivers
Compared to ~10-12K for all vehicles

2.9
Vehicles per Household for EV Drivers
Compared to 2.7 vehicles per household for all drivers

Summary Statistics
Alexandria-Arlington-DC Statistical Area

INCOME
57% of EV drivers in region have household incomes above $200K (compared to 8% for all drivers)

HOME OWNERSHIP
86% of EV drivers in region own their homes. In Virginia, 50% of homes have a garage or carport.

SOURCE:
2017 National Household Travel Survey, https://nhts.ornl.gov/
Preliminary Charging Location Analysis
## Preliminary Priority Scoring

City will develop a composite score for each block group through an iterative process.

<table>
<thead>
<tr>
<th>GIS Layer</th>
<th>Weight</th>
<th>Rationale for Including Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Multi-family Buildings</td>
<td>50%</td>
<td>Residents of multi-family buildings have unmet demand for EV charging</td>
</tr>
<tr>
<td>Number of Renters</td>
<td>5%</td>
<td>Renters may have less ability to install EV chargers</td>
</tr>
<tr>
<td>Number of Car Commuters</td>
<td>5%</td>
<td>Commuters have higher need for chargers than non-commuters</td>
</tr>
<tr>
<td>Likelihood of buying an EV (based on HH income)</td>
<td>20%</td>
<td>Pairing chargers with locations with high EV adoption will ensure greater utilization of chargers.</td>
</tr>
<tr>
<td>Number of chargers within ½-mile radius</td>
<td>20%</td>
<td>Ensure chargers are adequately spaced</td>
</tr>
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</table>
Preliminary Charging Location Analysis

Initial ranking of block groups based on priority score with sites of interest
Vision & Goals
## How to Prioritize Sites for Chargers?

### Equity
- Ensure all citizens have a public charger within 5-min. walk of their home.
- Some chargers will be very low demand.

### Cost
- Install as many chargers as possible in City for given budget.
- Could be a costly approach.

### Effectiveness
- Work with developers & HOAs to prioritize chargers in condos/apts.
- Draws potential City support away from other public sites.

### Multi-Unit Dwellings
- Work with businesses to prioritize chargers in business parks.
- Draws potential City support away from other public sites.

### Business Parks
- Work with businesses to prioritize chargers in business parks.
- Draws potential City support away from other public sites.
Next Steps
Next Steps

• In May, we will seek public input for charger locations and deployment strategies for EV charger deployment

• In July, we will have another public engagement opportunity around the draft EV Infrastructure Readiness Strategy

• In late summer/fall, the final EV Infrastructure Readiness Strategy will be released
Feedback and Input

We welcome your feedback and suggestions on the project. Please use the accompanying web link on the City’s website to provide input on these questions:

- What are your goals and vision for this plan?
- What types of locations should be the highest priority for future EV infrastructure?
- What are unique barriers for Alexandria with regards to EV charging infrastructure?
- Who are right stakeholders to engage and provide further input on EV charging infrastructure?
Thank you

Bill Eger
Energy Manager
Bill.Eger@Alexandriava.gov

Jennifer Slesinger
Principal Planner, T&ES
Jennifer.Slesinger@Alexandriava.gov

Megan Oleynik
Planner, T&ES
Megan.Oleynik@Alexandriava.gov
Thank You