FAIRFAX COUNTY PLANNING COMMISSION
ENVIRONMENT COMMITTEE
THURSDAY, FEBRUARY 7, 2013

COMMITTEE MEMBERS PRESENT:
Frank A. de la Fe, Hunter Mill District
Jay P. Donahue, Dranesville District
Earl L. Flanagan, Mount Vernon District
James R. Hart, At-Large, Chairman
Kenneth A. Lawrence, Providence District
Timothy J. Sargeant, At-Large

COMMITTEE MEMBERS ABSENT:
None

OTHER COMMISSIONERS PRESENT:
Janyce N. Hedetniemi, At-Large
Ellen J. Hurley, Braddock District
James T. Migliaccio, Lee District

FAIRFAX COUNTY STAFF PRESENT:
Dr. Kambiz Agazi, Fairfax County Environmental Coordinator
Pamela G. Nee, Chief, Environment and Development Review Branch (EDRB), Planning Division (PD), Department of Planning and Zoning (DPZ)
Noel H. Kaplan, Senior Environmental Planner, EDRB, PD, DPZ
Barbara J. Lippa, Executive Director, Planning Commission Office
Kara A. DeArrastia, Clerk to the Planning Commission

OTHERS PRESENT:
Matt Olson, Operations Research Analyst, The MITRE Corporation
Ellen Simon, Analyst, ICF International

ATTACHMENTS:
A. "Electric Vehicles in Metropolitan Washington: Understanding the Region's Current EV Readiness and Options for Expanding Their Use" Executive Summary, dated October 2012, prepared by the Metropolitan Washington Council of Governments
B. "Electric Vehicle Readiness Strategy: National Capital Region" presentation, dated February 7, 2013, prepared by Dr. Agazi
C. "Fairfax County's Comprehensive Plan and Potential Application in Support of Electric Vehicles" presentation, dated November 29, 2011, prepared by Mr. Kaplan
D. "Fairfax County, Government Summary of Electrical Permit and Inspections Process" document, dated February 7, 2013, prepared by Dr. Agazi
E. "Electric Vehicle Charging Stations and The Americans With Disabilities Act" Presentation, dated November 29, 2011, prepared by Ken Saunders, Director of the Fairfax County Office of Human Rights and Equity Programs

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Chairman James R. Hart called the meeting to order at 7:02 p.m., in the Board Conference Room, 12000 Government Center Parkway, Fairfax, Virginia 22035.

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Commissioner Flanagan MOVED THAT THE ENVIRONMENT COMMITTEE MINUTES OF NOVEMBER 29, 2012, BE APPROVED.

Commissioner Lawrence seconded the motion which carried unanimously.

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OVERVIEW OF ELECTRIC VEHICLE PERMITTING PROCEDURES AND INFRASTRUCTURE PLANNING EFFORTS AT THE METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS

Dr. Kambiz Agazi, Fairfax County Environmental Coordinator, distributed handouts, as shown in Attachments A through E. He then delivered a PowerPoint presentation regarding the Electric Vehicle (EV) Readiness Strategy for the National Capital Region, as shown in Attachment B.

Noel Kaplan, Senior Environmental Planner, Environment and Development Review Branch, Planning Division, Department of Planning and Zoning, provided background information on the presentation he had delivered to the Metropolitan Washington Council of Governments' (MWCOG) EV Planning and Processes Work Group on November 29, 2011, regarding Fairfax County's Comprehensive Plan and potential application in support of EVs, as shown in Attachment C. Dr. Agazi commended Mr. Kaplan on his excellent presentation, noting that it was well received by MWCOG members. He said Mr. Kaplan's presentation provided examples of potential language to support EV charging facilities that local governments throughout the region could use during the comprehensive planning process.

Dr. Agazi described the process required by the County to obtain an electrical permit for both new construction and existing building installations for residential and non-residential buildings, as outlined in Attachment D. He explained that an issue in the *Code of Virginia* that had prevented the installation of a separate meter to support Level 2 charging stations in single-family residences had since been resolved in coordination with the Fire Marshal and *Code* officials. In addition, Dr. Agazi called attention to a presentation that had been delivered by Ken Saunders, Director of the Fairfax County Office of Human Rights and Equity Programs, to MWCOG on November 29, 2011, regarding Americans with Disabilities Act (ADA) requirements and their implications related to EV charging stations, as shown in Attachment E.

Concluding his presentation, Dr. Agazi reviewed the short-term and mid/long-term goals as depicted on the last slide. He said he would keep the Planning Commission up-to-date on these efforts.

In response to questions from Chairman Hart, Dr. Agazi explained the following:

- The design and installation of commercial charging stations were required to incorporate ADA accessibility requirements because they offer a service to the general public;

- A certain number of accessible parking spaces were required on a given site based on a specified calculation regardless if any of the spaces accommodated a charging station;

- If a parking facility already complied with ADA accessibility requirements, the minimum number of accessible charger spaces required was not clearly defined;

- Compliance with minimum ADA Standards for Accessible Design would be required for new construction; however, for retrofits, provided that an ADA-accessible parking space was not removed, ADA compliance would not be required for a charging station parking space;

- A Level 1 charger (120 volts) would simply plug into a wall, although it would generally take approximately 16 hours to reach full charge; and

- A Level 2 charger (240 volts) would generally take approximately 4 hours to reach full charge, but it would require an electrician to obtain a permit.

Chairman Hart commented that issues sometimes occurred at the permit counter due to the volume of requests and complex procedures. He explained that if people were expected to request a permit for their Level 2 charger, staff should provide them with a cheat sheet, brochure, or checklist informing them of the correct procedures and tips to avoid problems.

Replying to a question from Commissioner Lawrence, Dr. Agazi confirmed that there were regional mechanisms for implementing outreach and education activities, such as using social media, the Internet, and Cable Channel 16. He pointed out that his "Electrical Permit and Inspections Process" fact sheet provided a link to a page on the County's Website regarding EVs and charging stations: http://www.fairfaxcounty.gov/dpwes/navbar/faqs/ev_equipment.htm. He said he believed that MWCOG envisioned deploying education tools, such as answering frequently asked questions for the region, similar to Clean Air Partners (a nonprofit partnership chartered by MWCOG and the Baltimore Metropolitan Council to help improve public health and the environment by working with businesses, organizations, and individuals throughout the region to raise awareness and reduce air pollution through voluntary actions).

Commissioner Lawrence suggested that the regional outreach and education activities emphasize the environmental and financial benefits of EVs. He added that he would be interested in participating in such an effort.

Answering a question from Commissioner Flanagan, Dr. Agazi explained that a substantially greater number of EV chargers had been installed in metropolitan areas along the West Coast, as depicted in Figure 3.7 on Slide 13 of his presentation, because of the federal focus on rollout along the West Coast and cultural factors.

Commissioner Flanagan said he would be interested in learning about successful EV charging infrastructure projects in other metropolitan areas. He also recommended that staff consider implementing a policy for locating charging stations at certain distances throughout Fairfax County. Dr. Agazi replied that many factors were involved in the deployment of charging station infrastructure such as utilities. He also commented that certain market and policy barriers had slowed down the EV adoption and infrastructure planning process.

Responding to questions from Commissioner Sargeant, Dr. Agazi indicated the need for jurisdictions to work with utility companies, such as Dominion Virginia Power, to inform them of the number and location of EV charging equipment to ensure that appropriate infrastructure was in place to accommodate the increased load and avoid service disruptions for their customers. He noted that adding large amounts of EV charging load to the electrical grid at times of already high demand could amplify peak load and stress the grid. He added that time-of-day pricing for charging an EV via a separate, dedicated meter installed in the home had been discussed with regional utility companies.

Commissioner Hurley indicated that she saw little benefit to a policy to have EV charging facilities at certain distances throughout the County because of the time it took to charge a battery. She expressed her view that the MITRE report had made a strong case for an emphasis on the provision of home charging equipment to enable residents to charge their EVs for extended periods at home.

In reply to a question from Commissioner Hedetniemi, Dr. Agazi commented on the “chicken and egg” issue, in which growth in EV sales was dependent on available charging stations, while new charging station installations were largely driven by increases in EV ownership. He further explained that:

- Local governments within the National Capital Region were in general agreement regarding an EV readiness strategy.

- The role of local governments should be to provide guidance on the location of EV charging stations where appropriate.

- Tokyo’s experience with EV charging station deployment was instructive. The Japanese government and private sector had collaborated to deploy massive amounts of EV charging station infrastructure around Tokyo. This effort resulted in a strong correlation between the number of EV purchases and the number of charging stations, as EV purchases soared after this charging infrastructure was deployed.

Dr. Agazi pointed out that currently it was difficult to formulate a business case for EVs and charging infrastructure. He indicated that he had data regarding the break-even point in terms of life-cycle savings versus initial cost. For example, if a person owned the same EV for 7 or 8 years and drove it approximately 30 to 40 miles per day, that owner would break even on the cost of that vehicle as compared to having purchased an equivalent gas-powered vehicle. He stressed that the cost of EVs would be a factor affecting the rate of adoption of this technology. Dr. Agazi concluded his remarks by saying that he personally believed that most people considered multiple factors, such as cost; availability of charging infrastructure; and environmental benefits, when deciding whether to purchase an EV.

Answering a question from Commissioner Donahue, Commissioner Sargeant explained that he drove a Chevy Volt, a plug-in hybrid electric vehicle (PHEV) that contains both an internal combustion engine and an electric motor, and the internal combustion mode is triggered when the battery was depleted. He said he could charge the battery to a range sufficient to cover his trip to a particular destination. He added that the installation of EV charging stations would enable PHEV owners to rely more heavily on the electric motor and battery rather than the use of conventional fossil fuels.

Commissioner Sargeant recommended the consideration of design features for EV infrastructure, such as an enclosed shelter or a designated area inside a building, to make it more convenient for EV users.

In response to questions from Commissioner Flanagan, Dr. Agazi said there had been cases in the County where parking garages for condominium units had been retrofitted to accommodate EV charging stations. He noted that although he had not seen EV charging stations at Home Depot stores, he acknowledged that the Cracker Barrel restaurant chain had been installing them at select sites throughout Tennessee. He commented that a business case for EV infrastructure would trigger their installation at more businesses.

Commissioner Donohue asked whether there was an ability to charge EVs partially (e.g., equivalent to filling up a half-tank of gasoline). Commissioner Sargeant replied that EVs could be partially charged to accommodate shorter trips.

Replying to a question from Commissioner Hurley, Dr. Agazi pointed out that for-profit businesses in Virginia could sell electricity to EV users. He explained that certain businesses provided free electricity to EV users as an incentive for them to shop at their stores while others allowed third-party vendors to install EV charging stations on their sites and sell the electricity.

Mr. Kaplan noted that he had attended the MWCOG event entitled, “Electric Vehicles: Making Good Business Sense,” on Friday, February 1, 2013, at the Washington Convention Center. He described some examples of business models:

- Capital One provided EV charging stations in its garage in McLean for use by employees;

- MOM's Organic Market had installed EV charging stations for free public use at its store in Merrifield to encourage people to stay in the store longer and support its mission to protect and restore the environment; and

- The eVgo network offered a paid subscription service for subscribers to access its Freedom Station sites.

Commissioner Sargeant suggested that staff consider how the future use of remote auto-controlled electronic vehicles and other technologies might incentivize or facilitate the use of EVs.

Answering a question from Chairman Hart, Dr. Agazi said he was not aware of any opposition or pushback from people or groups against EVs and charging stations, which was likely due to their small number.

Commissioner Hurley pointed out that the Los Angeles Airport offered free parking and charging for EVs, but some non-EV users had opposed this initiative because these spaces could be occupied up to 30 days per visit (*Note: Effective March 1, 2013, free parking is no longer provided to EV owners. Those using the parking lots must pay the posted rate*). Dr. Agazi also noted that a law in Washington, D.C. made it illegal for any vehicle to park in an EV charging space unless it was being charged or else the owner would be ticketed and/or towed. He said once the vehicle was fully charged, its driver would need to leave the space.

Commissioner Flanagan indicated that Virginia Governor Bob McDonnell had proposed eliminating the commonwealth's gas tax because revenues have decreased due to the advent of fuel-efficient, alternative-fuel, and electric vehicles.

Chairman Hart thanked Dr. Agazi for his informative presentation.

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UPCOMING MEETINGS

Chairman Hart announced that the Committee would next meet on the following dates at 7 p.m. in the Board Conference Room:

- Thursday, March 7, 2013 (Topic: Perspectives from private sector providers of EV supply equipment, part 1: Stephen Schey, Director, Stakeholder Services, ECOtality, North America, Inc.) (*Note: This meeting was subsequently cancelled*.)

- Thursday, April 4, 2013 (Topic: Proposed Fairfax County Stormwater Management Ordinance in response to stormwater regulation changes)

Mr. Kaplan said he would coordinate with Barbara Lippa, Executive Director, Planning Commission Office, to identify additional Committee meeting dates. He noted that he would also contact relevant staff from Fairfax County Public Schools (FCPS) and Stormwater Planning Division (SPD) in the Department of Public Works and Environmental Services to deliver a briefing at a future meeting regarding collaboration efforts between FCPS and SPD on stormwater management plans.

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The meeting was adjourned at 8:10 p.m.
James R. Hart, Chairman

An audio recording of this meeting is available in the Planning Commission Office, 12000 Government Center Parkway, Suite 330, Fairfax, Virginia 22035.

Minutes by: Kara A. DeArrastia

Approved: April 4, 2013

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Kara A. DeArrastia, Clerk to the
Fairfax County Planning Commission

Attachment A

ELECTRIC VEHICLES IN METROPOLITAN WASHINGTON

Understanding the Region's Current EV Readiness and Options for Expanding Their Use

Metropolitan Washington
COUNCIL OF GOVERNMENTS

October 2012

Electric Vehicles in Metropolitan Washington

EXECUTIVE SUMMARY

This report seeks to provide a framework for establishing a regional readiness plan for the deployment of electric vehicles (EVs) in the metropolitan Washington region. While total EV ownership in the region is relatively low (compared with other cities such as Portland, Oregon, or Los Angeles), consumer interest in EVs is growing and more EV models are being introduced in the regional market. However, the metropolitan Washington region's charging infrastructure and EV policy frameworks are not yet positioned to accommodate greater market penetration of these vehicles. This report contains recommendations for stakeholders to promote a consistent set of practices across the region that will remove barriers to EV adoption and infrastructure planning while mitigating potential impacts on the electrical grid. This coordinated planning effort will help ensure that the region can receive the health, environmental, and sustainability benefits that EV technology offers.

BENEFITS OF EV DEPLOYMENT

EV adoption presents environmental, economic, and energy security benefits to the country and to the region. The U.S. Department of Energy (DOE) sees the electrification of vehicles as one of the highest impact strategies for reducing greenhouse gas emissions between now and 2030.[1] Due to the relatively low greenhouse gas emissions profile of the Washington region's electrical grid, EVs charged in most parts of the region produce fewer greenhouse gasses than any currently available hybrid vehicle (equivalent to 50 mpg or greater).[2] And as renewable portfolio standards and other policies increase the proportion of low- and no-emissions electricity available on the grid, the environmental impact of EVs will continue to improve.

EVs can play an important role in achieving the region's air quality goals by reducing vehicle emissions. In the metropolitan Washington region, transportation emissions accounted for 55 percent of NOx emissions and 16 percent of fine particle ($PM_{2.5}$) emissions in 2007. Because EVs produce no tailpipe emissions, they are good candidates to help significantly reduce pollution from mobile sources.

[1] U.S. Department of Energy Office of Energy Efficiency & Renewable Energy. *Vehicle Technologies Program Multi-Year Program Plan (2011-2015).* http://www1.eere.energy.gov/vehiclesandfuels/pdfs/program/vt_mypp_2011-2015.pdf

[2] Union of Concerned Scientists. *State of Charge: Electric Vehicles' Global Warming Emissions and Fuel-Cost Savings across the United States.* Rev. April 12, 2012. http://www.ucsusa.org/clean_vehicles/smart-transportation-solutions/advanced-vehicle-technologies/electric-cars/emissions-and-charging-costs-electric-cars.html

EVs also offer economic benefits through fuel cost savings. EVs have fuel economy ratings of 75 to over 100 miles per gallon equivalent (MPGe), and cost approximately $0.04 per mile to operate when charged in the Washington region.[3] Conventional vehicles, at an average of 27 mpg, cost nearly $0.13 cents per mile.[4] According to a study by the Union of Concerned Scientists, EV drivers in the Washington region could save an estimate of $950 per year in fuel costs compared to those driving internal combustion vehicles, depending on fuel prices, electricity rates, and miles driven.[5]

Additionally, EVs offer their owners protection against future gasoline price volatility. And because EVs rely on domestically produced electricity rather than on petroleum, a largely imported fuel, they promote energy security.

CHALLENGES TO EV ADOPTION

Despite the benefits of EVs, challenges such as unfamiliarity with the technology, range anxiety, underdeveloped charging networks, limited vehicle availability, and relatively high vehicle cost have hindered their adoption. In addition, the absence of a clear policy framework for EV infrastructure planning—which considers permitting, siting, zoning, utility policy, and other issues—has amplified existing market barriers. A regional strategy is needed to bridge these obstacles and clear the way for wider EV recognition and use.

RECENT COG EV PLANNING INITIATIVES

COG held an EV Workshop in early 2011 to examine successful EV readiness strategies and to begin the conversation at a regional level on how to effectively and collectively deploy EV transportation technology. Participants, including local governments and industry experts, agreed on the need for an EV readiness strategy to facilitate deployment in the metropolitan Washington region.

In 2011, in response to interest in EV planning across the metropolitan Washington region, COG and the Greater Washington Region Clean Cities Coalition embarked on a new regional Electric Vehicle Planning Initiative. The scope of this stakeholder-driven initiative is to identify the issues for regional EV deployment and to make recommendations for the region and local jurisdictions to consider in designing and implementing programs to facilitate EV adoption.

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[3] In the metropolitan Washington region, EVs are estimated to cost approximately 4.3 cents to 6.6 cents per mile to operate, based on the Pepco Standard Offer Rate. Source: Union of Concerned Scientists, *State of Charge: Electric Vehicles' Global Warming Emissions and Fuel-Cost Savings across the United States*. Rev. April 12, 2012. http://www.ucsusa.org/clean_vehicles/smart-transportation-solutions/advanced-vehicle-technologies/electric-cars/emissions-and-charging-costs-electric-cars.html. See Table 2.1.

[4] The EPA combined average fuel economy rating of U.S. compact cars in 2010 was 27 mpg, and a gas price of $3.50 is assumed. See Union of Concerned Scientists report, above.

[5] See Union of Concerned Scientists report, above.

Under this initiative, the Electric Vehicle Planning Workgroups (referred to herein as the Task Force) were focused on infrastructure development and local government policy. The Task Force considered information on vehicle ownership and usage patterns, as well as best practices locally and from across the United States, to assist in developing considerations, recommendations, and priorities for an EV strategy for the metropolitan Washington region.

Six subgroups were formed to address the specific issue areas of infrastructure siting; comprehensive planning, zoning, and building codes; permitting and inspection; electric utility policy; EV use in fleets; and outreach and education. These subgroups met regularly from February through June 2012 to develop the recommendations put forth in this report.

EV and EVSE DEPLOYMENT PLANNING

COG staff and the EVSE Deployment Planning subgroup sought to provide an assessment of the current state of EV adoption and charging infrastructure (broadly referred to as electric vehicle supply equipment, or EVSE) in the Washington, DC region. Staff used vehicle registration data, survey data on regional driving patters, and information on publicly accessible EV charging stations to assess the potential for EV expansion. Given these findings, the stakeholder group provided recommendations on strategic locations for charging stations, suggestions for incentives to promote charging expansion, provisions to reduce the cost of future EVSE installation, and considerations for multifamily residential and workplace charging.

Regional Forecast for EV Ownership

According to data provided by Virginia, Maryland, and the District of Columbia Motor Vehicle Departments, there are approximately 500 EVs registered in the metropolitan Washington region. At least three major EV and PHEV models are available in the region, and service to convert hybrids to PHEVs is available.

While it may not be possible to predict exactly how many EVs will be operating in the region in coming years, one means of estimating future EV adoption is to analyze the recent experience of hybrid vehicle adoption. According to data from the Transportation Planning Board (TBP), from 2005 to 2011, the number of registered hybrid vehicles in the region grew more than 600 percent, from approximately 12,000 vehicles to more than 70,000. COG staff determined that a conservative estimate would be 1,500 to 3,000 EVs operating in the region by the end of the decade. The high estimate could see anywhere from 50,000 to 75,000 EVs on the region's roadways by 2020. A projection conducted by the Electric Power Research Institute, based on past hybrid sales, manufacturer production estimates, and other publicly available studies, predicts that there could be 15,000 to over 30,000 EVs in the Washington region by 2015.

Potential for EV Use

COG staff analyzed the potential for EVs in the context of current driving patterns in the region. According to COG's Household Travel Survey, most vehicle trips in the region are relatively short, with an average vehicle trip length of 7.7 miles. This is well within the range of one charge for all EVs in the market today. Therefore, for most daily commutes and other trip purposes, the relatively short length of the trips would not cause significant range anxiety.

Publicly Accessible EV Charging Infrastructure

A growing EV charging infrastructure exists in the metropolitan Washington region as a result of stimulus funding through state governments and private investment. COG staff developed an inventory of EV charging stations for the metropolitan Washington region. Altogether, the inventory identified 332 chargers in 133 publicly available charging station locations, 11 of which are planned stations. The District of Columbia has the most charging stations among COG jurisdictions (36), followed by Arlington County, Virginia (15); Fairfax County, Virginia (18); and Charles County, Maryland (11). The District of Columbia and Arlington County, Virginia, have the highest number of chargers (85 and 62, respectively). About 40 percent of the chargers are Level 1, and the remaining 60 percent are Level 2.[6] No DC fast chargers were installed when the inventory was developed. The inventory indicates that building managers are installing EVSE in a variety of land uses.

LOCAL GOVERNMENT POLICY

To understand the current EV policy landscape of the metropolitan Washington region, COG conducted a survey of its 22 member jurisdictions in early 2012 about EV permitting procedures and infrastructure planning efforts. Results of the survey indicated that with some exceptions, most jurisdictions reported having no EV policy development in place. Two exceptions are the District of Columbia and Fairfax County, Virginia, which are integrating EV considerations into the permit review process, building code policy, and ADA parking restrictions. The City of Frederick, Maryland, and the City of Falls Church, Virginia, indicated that they are tracking EV charging permit applications. In other jurisdictions, electrical permits do not indicate whether an EV charging station is being installed—thus presenting a barrier to tracking. Additionally, if a dedicated circuit is already installed, EV drivers charging at 120V (Level 1) outlet would not need to obtain a permit.

The Municipal Policy and Permitting/Inspections subgroups emphasized that local governments will play a critical role in the region's EV readiness. To facilitate continued growth of the market and smooth the transition to higher rates of EV adoption, the subgroups recommend that local governments ensure that EV infrastructure development is addressed in comprehensive

[6] See Section 2 for definitions of EV charging technology.

planning efforts and that zoning, building codes, and permitting and inspection processes provide a pathway to the expeditious installation of charging equipment. Streamlined permitting and inspection processes, EV and charging incentives, infrastructure readiness, low permitting and inspection costs, and nominal installation costs all contribute to reducing barriers to greater EV adoption.

ELECTRIC UTILITY POLICY

The regulatory status of EV charging stations—contained in provisions of electric utility policy—can help or hinder the ability of private companies and utilities to provide EV charging services. Across the region, the regulatory status of EV charging service providers is inconsistent and in some cases unclear. Maryland, Virginia, and the District of Columbia have all taken steps in recent years to resolve areas of uncertainty in their electric utility policy as it relates to EVs and EV charging. However, room for improvement remains, particularly when it comes to notifying utilities about EV charging station locations.

The Electric Utility Policy subgroup found that clear state-level policies are needed to promote private investment in EV charging infrastructure for charging in the for-pay charging market. They recommend that ideally, local and state policy would allow utilities to be notified in advance about the location of EV charging equipment so they can ensure that appropriate infrastructure is in place to accommodate the increased load and avoid service disruptions for their customers.

EVs FOR FLEET USE

A 2012 survey of fleets in the metropolitan Washington region found that EVs are being adopted slowly. The Greater Washington Region Clean Cities Coalition's survey of 11 fleet managers found that most EVs currently in operation are used onsite, such as trucks used on landfills or campus landscaping equipment.[7] According to the Coalition, fleet managers cite the cost of EVs and infrastructure as obstacles to purchasing additional EVs.

The Fleets subgroup provided recommendations on promoting partnerships between governments and manufacturers to reduce costs and increase utilization of EVs in fleets, encourage charging infrastructure sharing, and promote cooperative purchasing.

OUTREACH AND EDUCATION

The public's current level of knowledge about electric vehicles is limited. Education efforts by private and public entities (including nongovernmental organizations, electric utilities, PEV

[7] Greater Washington Region Clean Cities Coalition. *Clean Cities 2011 Annual Report*. Spring 2012.

service providers, auto dealers, other businesses, and government) are needed to bridge the gap.[8] To set the stage for EV marketplace success in the metropolitan Washington region, regional partners involved in the Metropolitan COG Electric Vehicle Planning Initiative have identified key target audiences and information needs for those audiences.

In addition to identifying an initial list of resources for EV stakeholders to use in education and outreach efforts, the subgroup provides recommendations on how to increase outreach efforts throughout the region. Continuing to search for and share resources, engaging with regional partners to encourage collaboration and to share experiences, and promoting EV awareness through industry training and curricula should be priorities for the region.

SUMMARY OF RECOMMENDATIONS

Achieving EV readiness in the metropolitan Washington region will require a coordinated approach among all stakeholders, including utilities, players in the EV industry, state and local governments, and nonprofit groups. This report contains recommendations for these stakeholders to promote a consistent set of practices across the region that will remove barriers to EV adoption and infrastructure planning.

The top five recommendations to facilitate EV deployment in the region are as follows:

1. Stakeholder partnerships, such as a Washington Regional Electric Vehicle Partnership, should be formed to develop a business case for EVs, and to assess the potential for community return on investment.
2. Stakeholders should consider offering incentives such as preferred parking, HOV occupancy exceptions, and tax credits to promote EV adoption.
3. Electric permitting procedures should identify EVSE installations and notify electric utilities of their locations.
4. Outreach and education is needed to promote EV adoption and inform the public of its benefits.
5. Comprehensive plans and zoning regulations should guide EV infrastructure development and ensure that the built environment can accommodate future EVSE installations.

Further details are provided in the report and appendices.

[8] Center for Climate and Energy Solutions. *An Action Plan to Integrate Plug-in Electric Vehicles with the U.S. Electrical Grid.* March 2012. http://www.c2es.org/docUploads/PEV-action-plan.pdf

Attachment B

Electric Vehicle Readiness Strategy: National Capital Region

Kambiz Agazi
Environmental Coordinator
Fairfax County, Virginia
February 7, 2013
Kambiz.agazi@fairfaxcounty.gov

Presentation Outline

- Historical Timeline of Events
- Electric Vehicle (EV) Workgroups
- Barriers to EV Deployment
- Purpose of Regional Strategy
- EV Report Overview
- Priority Recommendations
  - Fairfax County Contribution
- Next Steps

Historical Timeline of Events

- In early 2011 electric vehicles were delivered to Washington area dealerships.
- COG hosted an Electric Vehicle Forum in April 2011 to learn about electric vehicles and successful local and regional readiness strategies.
- In July 2011 the Climate Energy and Environment Policy Committee (CEEPC) began organizing the regional strategy.
- In September 2011 two electric vehicles (EV) workgroups were formed.

Electric Vehicle Workgroups

- EV Infrastructure Planning
  - EV Ownership and Driving Patterns
  - Residential, Commercial and Workplace Charging Assessment
  - Outreach & Communication
  - Electric Utility
- EV Policy and Processes
  - Permitting and Inspection Processes
    - ADA Requirements
  - Comprehensive Plan Policy
  - Zoning Ordinance Considerations

Purpose of Regional EV Strategy

- Coordinated approach will ease EV deployment by addressing barriers
- Region's policies and charging infrastructure not yet ready for growth in EV market
- EV offers potential environmental, economic and energy security benefits
  - Reduced tail pipe emissions (NOx,VOC,CO,CO_2)
  - Reduced fuel cost
  - Reduced dependence on imported fuel

Barriers to EV

- Limited availability of EVs for sale, slow demand, cost
- Need for additional charging infrastructure to support future
- Range anxiety (travel distance between charging)
- Policies, Permitting and Inspection

Evaluating EV Readiness, Washington Region

- Local government policies, data
- Vehicle Registration
- Household Travel Demand Survey (2007–2008)
- Charging Station (EVSE) Inventory, number and location

Survey of Local Governments (Jan–Feb 2012)

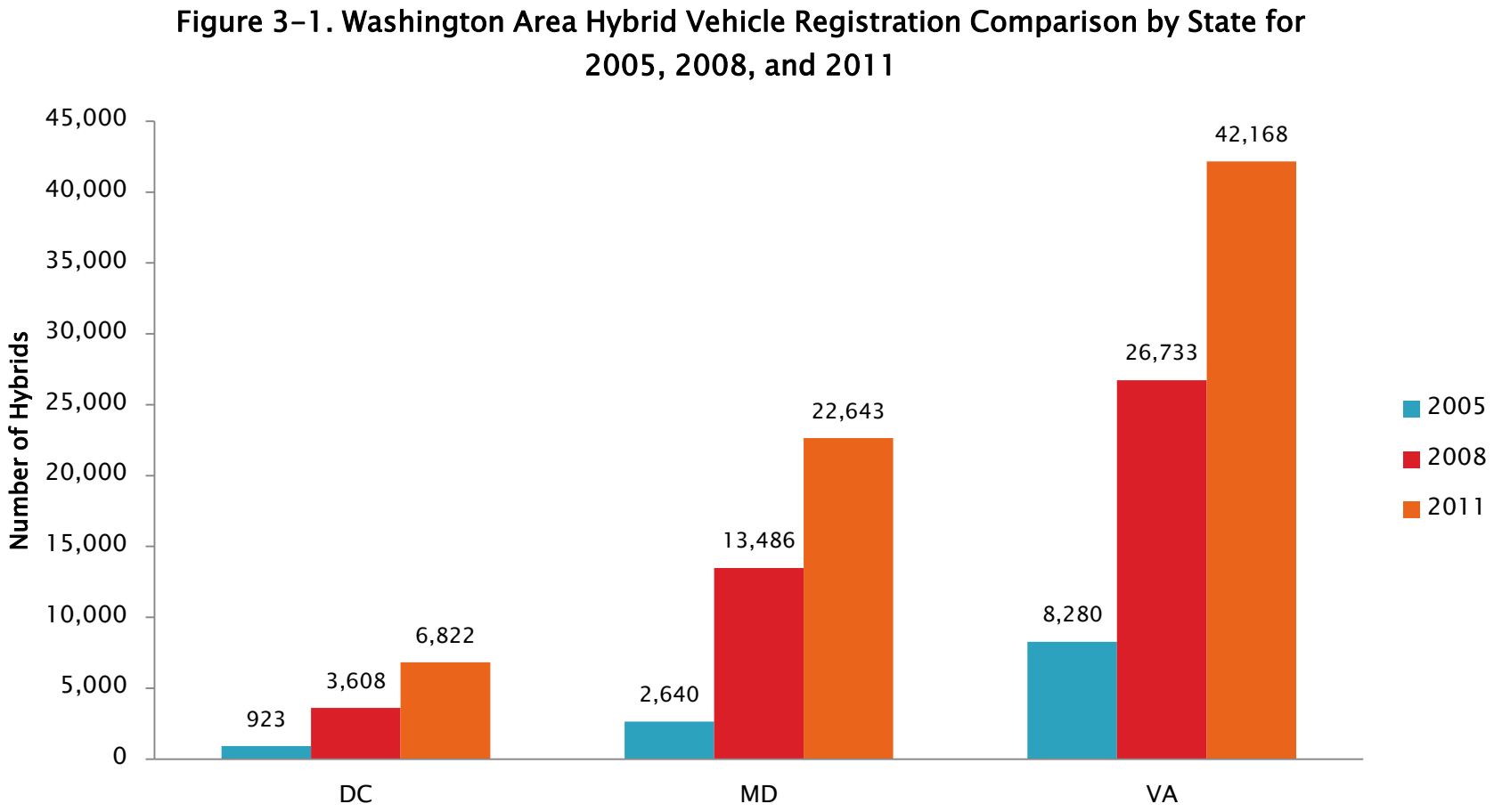
- No formal EV policy (Comprehensive Plan or otherwise).
  - DC and Fairfax County have zoning, permitting and ADA parking considerations.
- Most permit EV charging stations as a standard electrical appliance.
  - City of Frederick and Falls Church track EV charging permit applications.
  - DC and Fairfax County have online permitting.

Vehicle Registration – Feb. 2012

- Less than 500 EVs registered in metro Washington region
  - 189 MD suburbs
  - 110 District of Columbia
  - 173 Northern Virginia
  - Total: 472
- Hybrid registration: 76,181 vehicles (2011)
- History of early adopters, hybrid vehicle registration 2005–2011 suggests major EV growth potential

Source of data: MWCOG

Hybrid Vehicle Registration



Source of data: MWCOG

Regional Household Travel Demand Survey

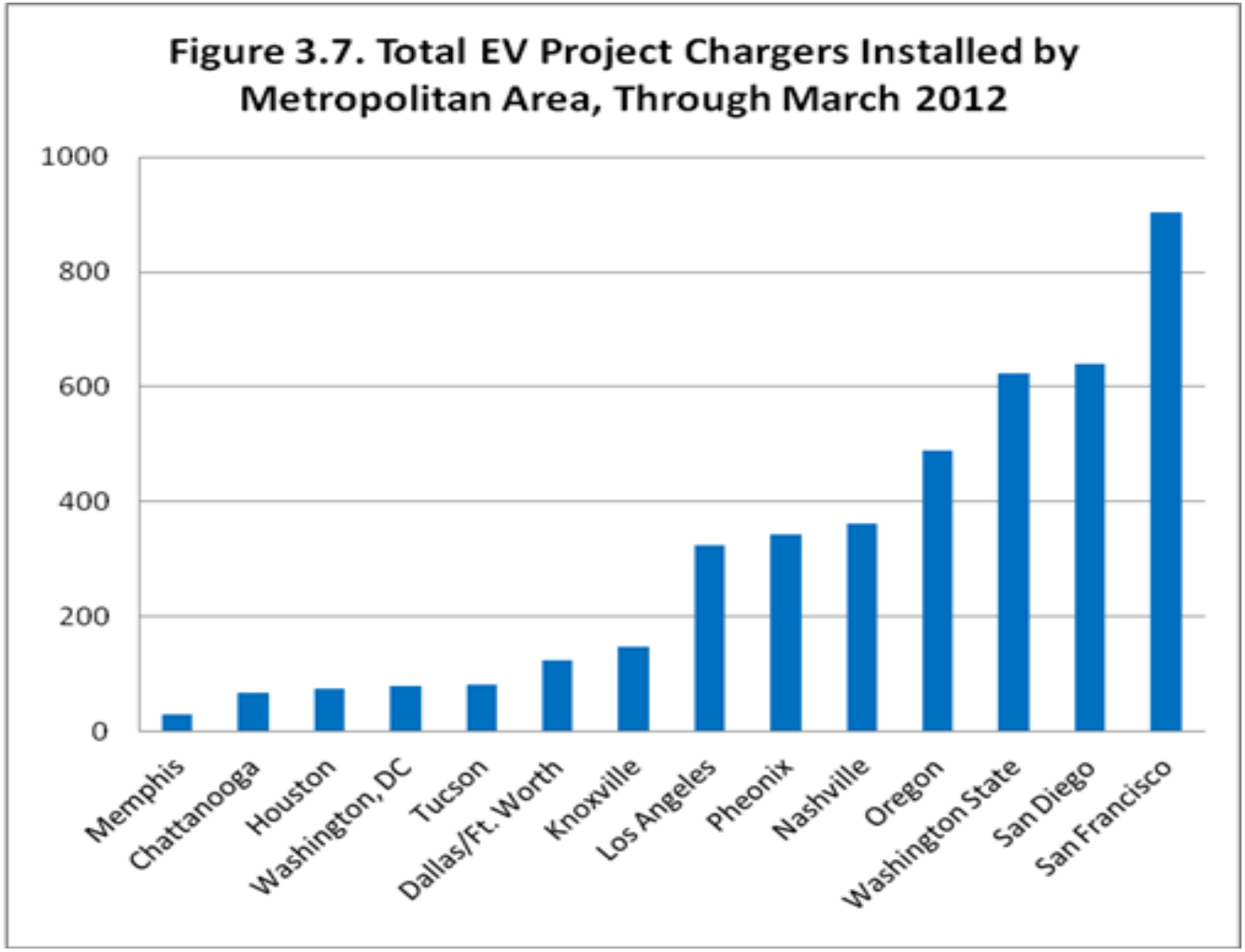
- 81% of daily trips in region are by auto
- Most trips relatively short, average 7.7 miles
- Work trips: 90% of trips are less than 20 miles one way
- Shopping trips: 96% are less than 20 miles one way

Source of data: MWCOG
Fairfax County average daily commute ~ 30 miles

Inventory of EV Charging Equipment

- 332 chargers at 133 charging stations in metropolitan Washington region
  - District: 36
  - Arlington: 15
  - Fairfax Co: 18
  - Charles Co: 11
- Location of charging stations:
  - Office (1/3 of stations)
  - Shopping
  - Dealership

Source of data: DOE alternative Fuels Data Center, EVSE websites including ChargePoint America, SemaCharge, 350 Green, Blink, Car Charging, Inc. also Plugshare, Google Maps, Clean Technica and property websites.



Ecotality, May 2012

EV Report Overview

- Recommendations to remove barriers to EV deployment and infrastructure planning
- EV adoption offers environmental, economic and energy security benefits
- EV and EV Supply Equipment (EVSE) Deployment Planning
  - Projected Demand, EVSE siting
- Local Government Policy & Processes
  - Policy/Planning & Zoning, Inspection & Permitting
- Electric Utility Policy
- Benefits of EV for Fleet Use
- Outreach and Education

→

- 25 Recommendations 5 priorities

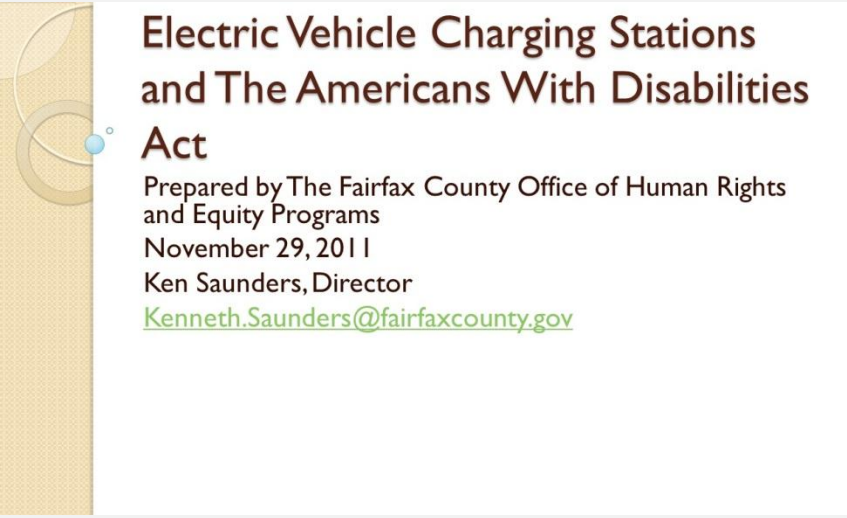
Priority Recommendations

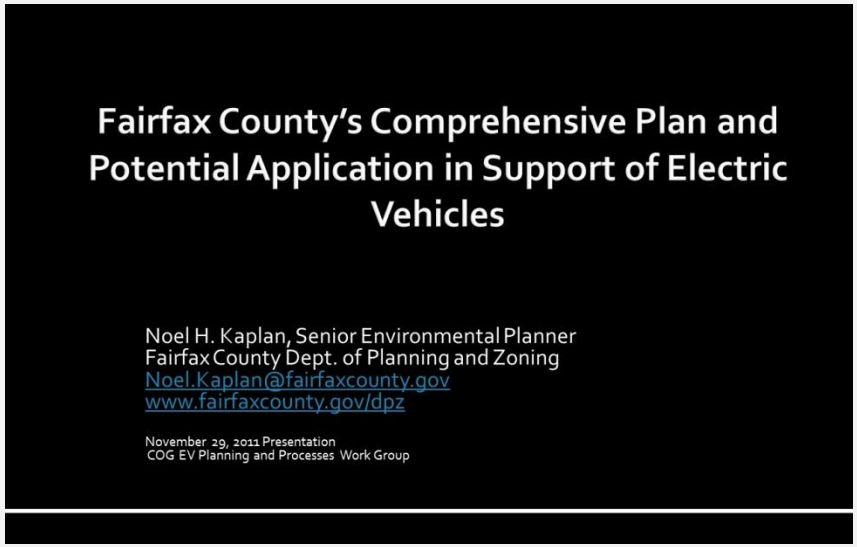
- Local and state officials, employers, property managers, and other EV stakeholders should consider offering incentives to spur EV market, including preferred parking and HOV occupancy exceptions for EV drivers and benefits for developers who invest in EVSE infrastructure.
- Stakeholder partnerships should present the business case for EVs and make clear the community return on investment.

Priority Recommendations

- Electric permitting procedures should identify EVSE installations and notify electric utilities of their locations.
- Outreach and education is needed to promote EV adoption and inform the public of its benefits
- Comprehensive plans and zoning ordinances/regulations should guide EV infrastructure development and ensure that the built environment can accommodate future EVSE installations.

Fairfax County Comprehensive Plan and ADA Guidance





EV Report : Next Steps

Short Term Goal

- Siting and Design Guidelines (presentation from Georgetown climate Center)
- Follow-up from Feb. 1 EV forum – Build on momentum from forum and get input from the business sector on relevant EV technology issues

Mid/Long Term Goal

- Continue with the EV Work Group, with better engagement of the business sector

Attachment C

Fairfax County's Comprehensive Plan and Potential Application in Support of Electric Vehicles

Noel H. Kaplan, Senior Environmental Planner
Fairfax County Dept. of Planning and Zoning
Noel.Kaplan@fairfaxcounty.gov
www.fairfaxcounty.gov/dpz

November 29, 2011 Presentation
COG EV Planning and Processes Work Group

PRESENTATION OUTLINE

- The County's Regulatory and Policy Context
- The Comprehensive Plan
- "By Right" Development vs. Development Review
- Examples of Plan text to Support Electric Vehicle Charging Facilities

The Regulatory and Policy Context

Regulation

"Shall"

- The County Code
- The Zoning Ordinance

Policy

"Should"

- The Comprehensive Plan

How do the Comprehensive Plan and the Zoning Ordinance work together?

Comp. Plan

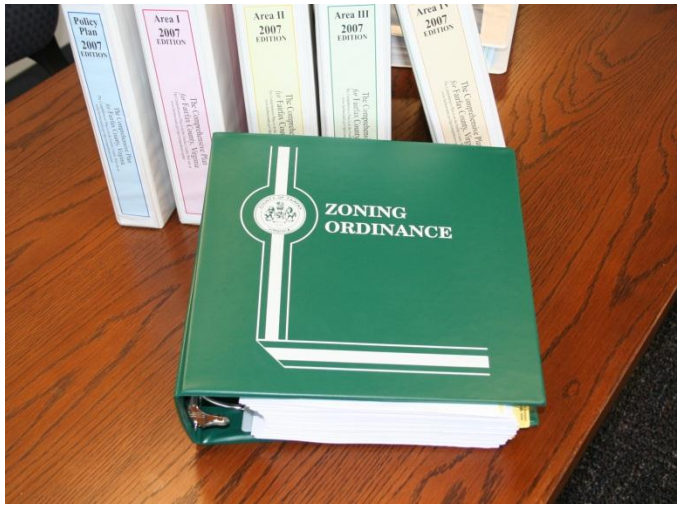
- ✓ **Guide**
- ✓ **"Should"**

General policies and text regarding land use, transportation, environment, other

Zoning Ordinance

- ✓ **Law**
- ✓ **"Shall"**

Specific standards for use, density/intensity, size, setbacks, height and open space

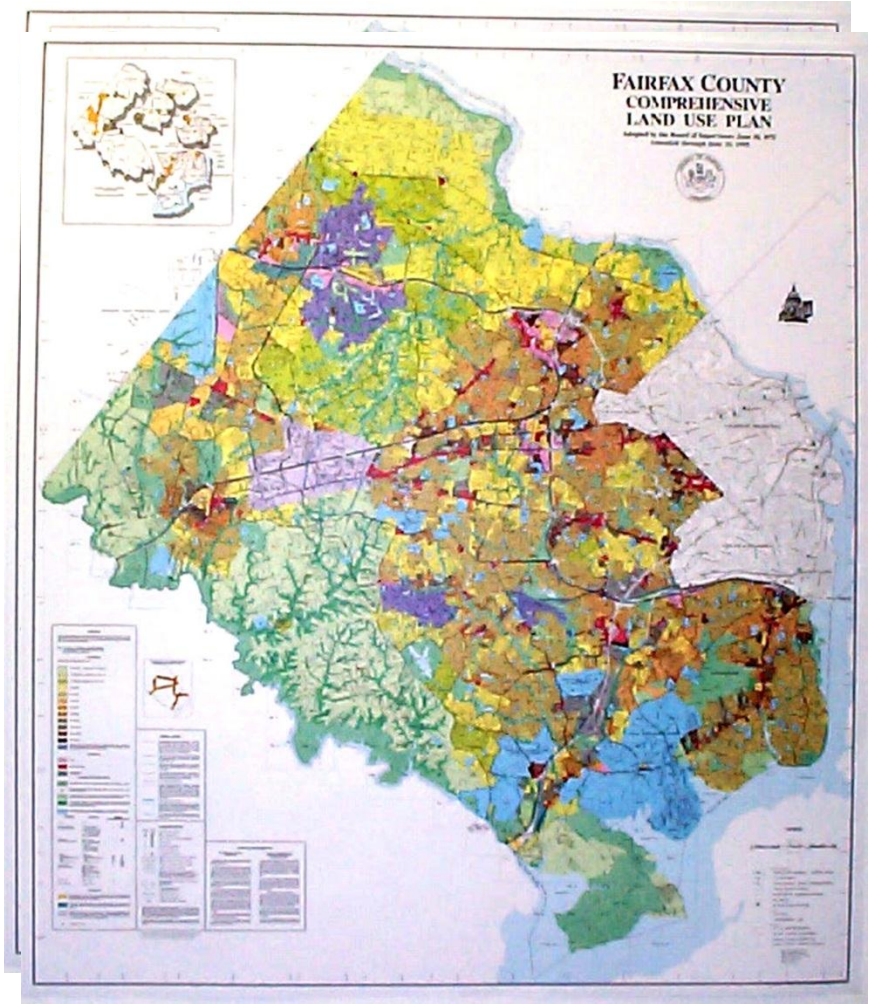


Proposals to rezone property are evaluated for conformance with the Comprehensive Plan

The Comprehensive Plan

- Role: A GUIDE for decision-making about the County's land use
- Scope: Anticipates change over the next 20 years--Does not specify when development will occur
- Statutory mandate: required by the Code of Virginia to shape the orderly development of the county

Components of the Plan



- The Comprehensive Plan Land Use Map
- Other Maps: Transportation & Trails
- Comprehensive Plan Text:
  - The Policy Plan
  - The Area Plans: Areas I, II, III, and IV
  - Chesapeake Bay Supplement

Plan text: The Policy Plan

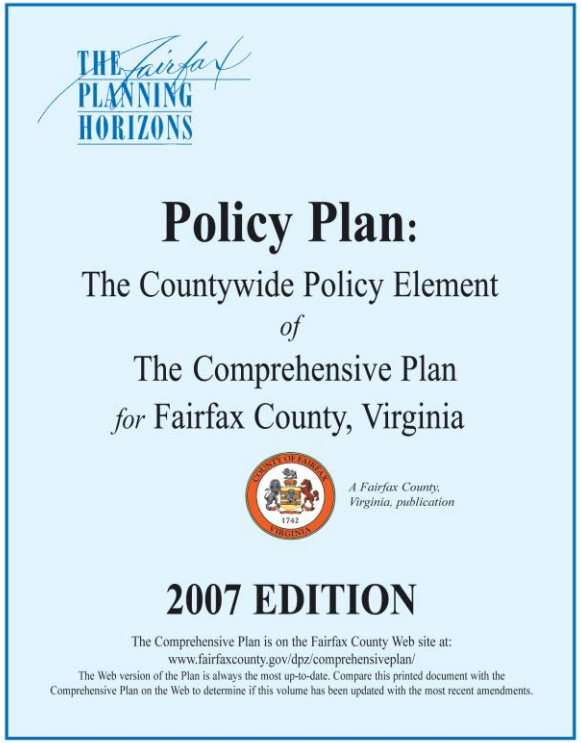
- Introduction to and history of Comprehensive Plan in Fairfax County
- Identification of County goals, objectives and policies regarding:

  - Land Use
  - Transportation
  - Housing
  - Environment
  - Economic Development
  - Heritage Resources
  - Human Services
  - Parks and Recreation
  - Revitalization
  - Public Facilities

Policy Plan Environment Section

http://www.fairfaxcounty.gov/dpz/comprehensiveplan/policyplan/environment.pdf

- Environmental Pollution
  - Air Quality
  - Water Quality/Stormwater Management
  - Potomac Estuary/Chesapeake Bay
  - Noise
  - Light Pollution
- Environmental Hazards
  - Soil Constraints
  - Flood Impacts
  - Pipelines/Transmission Lines
- Environmental Resources
  - Environmental Quality Corridors
  - Tree Cover
  - Conservation Easements
- Environmental Coordination
- Resource Conservation/Green Building Practices (includes energy)
- Chesapeake Bay Supplement


THE PLANNING HORIZONS

Policy Plan:

The Countywide Policy Element
of
The Comprehensive Plan
for Fairfax County, Virginia

A Fairfax County, Virginia, publication

2007 EDITION

The Comprehensive Plan is on the Fairfax County Web site at:
www.fairfaxcounty.gov/dpz/comprehensiveplan/
The Web version of the Plan is always the most up-to-date. Compare this printed document with the Comprehensive Plan on the Web to determine if this volume has been updated with the most recent amendments.

Fairfax County
Plan Amendment Process

Ways to amend Comprehensive Plan:

1. Area Plans Review (APR)
2. BOS-authorized Plan Amendment
   - Site-specific
   - Special Study
   - Policy Plan Amendments

By-Right Development

- Development conducted in accordance with existing zoning
- Development must be allowed as long as it complies with zoning and other County Code requirements
- Developers not required to comply with Comprehensive Plan policies

Development Review

- Development must be approved subsequent to a public hearing
  - Rezonings (Board of Supervisors)
  - Special Exceptions (Board of Supervisors)
  - Special Permits (Board of Zoning Appeals)
  - Variances (Board of Zoning Appeals)
- Comprehensive Plan conformance a major consideration

Development Review

- Rezonings: Proffer commitments can be negotiated
- Others: Development Conditions can be imposed
- All: Public participation opportunities
  - Mandatory public hearings
  - Other meetings often held

Proffers

- A legally binding condition that is in addition to the applicable zoning district regulations.
- Offered voluntarily by a property owner and accepted by the Board of Supervisors in a rezoning
- Once accepted, proffers may be modified only by a proffered condition amendment (PCA) application or other zoning action of the Board and the hearing process required for a rezoning application applies.
- Proffers run with the land

So, What does all this have to do with electric vehicles?

- Plan guidance provides the context for negotiation of commitments from developers during the zoning process
- Plan recommendation language establishes level of expectation, recognizing that this is guidance, not regulation
- Plan guidance can be general or specific

Example of Possible Plan Text*

A. Establishment of general support for electric vehicle charging facilities and commitments from developers, without setting expectations or thresholds:

"Encourage the provision of charging stations and related infrastructure for electric vehicles within new development and redevelopment proposals."

*Several slides present Plan text examples; these are examples and not endorsements.

Example of Possible Plan Text

B. Same as example "A," with an emphasis on residential projects:

"Encourage the provision of charging stations and related infrastructure for electric vehicles within new development and redevelopment proposals, particularly for residential proposals where other vehicle charging opportunities would not be available."

Example of Possible Plan Text

C. Emphasis on "EV-ready" design:

"Encourage readiness for charging stations and related infrastructure for electric vehicles within new development and redevelopment proposals."

Example of Possible Plan Text

D. Establishment of an expectation for installation of electric vehicle charging facilities for all development proposals, without the identification of specific thresholds:

"Ensure that zoning proposals will incorporate the provision of charging stations and related infrastructure for electric vehicles."

Example of Possible Plan Text

E. Establishment of an expectation for installation of electric vehicle charging facilities for certain development proposals, without the identification of specific thresholds:

"Ensure that zoning proposals for multifamily residential development at or above the mid-range of the Plan density range will incorporate the provision of charging stations and related infrastructure for electric vehicles."

Example of Possible Plan Text

F. Establishment of an expectation for installation of electric vehicle charging facilities for all development proposals, with specific thresholds established:

"Ensure that zoning proposals will incorporate the provision of charging stations and related infrastructure for electric vehicles. There should be at least one charging station provided for every XXXX parking spaces; charging stations should have charging times no longer than those of Level 2 charging stations as described in '{insert name of guidance document}."

Plan text considerations

- Policy goals
- Implementation expectations
- Legal authorities (e.g., Dillon Rule)
- Breadth vs. specificity
  - Room for negotiation vs. certainty
  - Adaptability to changes in technology

Questions?

Contact me!

Noel Kaplan

Senior Environmental Planner

Fairfax County Department of Planning and Zoning

Noel.Kaplan@Fairfaxcounty.gov

703-324-1369

Attachment D

Fairfax County, Government

Summary of Electrical Permit and Inspections Process

February 7, 2013

Background: Provided below is a summary of the process required to obtain an electrical permit for both new construction and existing building installations for residential and non-residential buildings.

Residential:

1. **New construction or existing building installation permit**: electrical permit(s) can be obtained online (see handout material for an online example) at www.fairfaxcounty.gov/fido or in person at the permit application center on the second floor of the Herrity Building at 12055 Government Center Parkway, 2nd Floor, Fairfax, Virginia 22035.

   FAQs

   a. Residential is defined as: Town home, duplex, and one or two single family dwellings.
   b. Electrical plan submission is not required for residential installations
   c. Do I need a permit for...? http://www.fairfaxcounty.gov/dpwes/navbar/faqs.htm
   d. Electric Vehicles http://www.fairfaxcounty.gov/dpwes/navbar/faqs/ev_equipment.htm

Commercial:

2. **New or existing construction/permit:** electrical permit(s) can be obtained online (see handout material for an online example) at www.fairfaxcounty.gov/fido or in person at the permit application center on the second floor of the Herrity Building at 12055 Government Center Parkway, 2nd Floor, Fairfax, Virginia 22035.

   FAQs

   a. Non-residential construction is defined as: Everything else that is not one or two family dwelling units such as, multi-family (high/low rise) or commercial office/retail, industrial, educational and places of worship.
   b. Electrical plan submission requirements are detailed in the tenant layout publication and is required for all new equipment and plug outlet installations. If you are getting a separate service and new meter, a site plan may be needed for land disturbance of more than 250 square feet but building plan may not be needed. See the zoning requirements for a minor site plan.
   c. A revised parking tabulation may be needed if the installation is taking a required parking space out of available use. An ADA upgrade may be required if a parking lot is

restriped per USBC thresholds. If all existing parking remains and no restriping of parking spaces is done, than no additional ADA spaces would be required.

Inspection:

3. Residential and Commercial electrical inspection can be requested online at www.fairfaxcounty.gov/fido, by phone or in person to the inspection office on the sixth floor of the Herrity Building at 12055 Government Center Parkway, Virginia 22035. Inspection notification is provided online as an updated status of the permit in FIDO (Fairfax County Inspection Database Online). Typical turn-around is 24 hours. State requirement is 2 days.

Electric Vehicle Charging Stations and The Americans With Disabilities Act

Prepared by The Fairfax County Office of Human Rights and Equity Programs

November 29, 2011

Ken Saunders, Director

Kenneth.Saunders@fairfaxcounty.gov

What is the ADA?

- The Americans With Disabilities Act (ADA) was enacted in 1990 and later amended in the ADA Amendments Act of 2008 (ADAAA), which became effective January 1, 2009.

What is the ADA?

- The Findings and Purposes of the ADAAA provide that "…in enacting the Americans with Disabilities Act of 1990 (ADA), Congress intended that the Act "provide a clear and comprehensive national mandate for the elimination of discrimination against individuals with disabilities" and provide broad coverage…."

Title II Applies to Who?

- Title II of the ADA covers all activities of State and local governments regardless of the government entity's size or receipt of Federal funding. Title II requires that State and local governments give people with disabilities an equal opportunity to benefit from all of their programs, services, and activities (e.g. public education, employment, transportation, recreation, health care, social services, courts, voting, and town meetings). Public entities are not required to take actions that would result in undue financial and administrative burdens.

Title II Applies to Who?

- Private individuals may bring lawsuits to enforce their rights under title II and may receive remedies, including reasonable attorney's fees. Individuals may also file complaints with eight designated Federal agencies, including the Department of Justice and the Department of Transportation.

Title III Applies to Who?

- Title III of the ADA covers businesses and nonprofit service providers that are public accommodations, privately operated entities offering certain types of courses and examinations, privately operated transportation, and commercial facilities. Public accommodations are private entities who own, lease, lease to, or operate facilities such as restaurants, retail stores, hotels, movie theaters, private schools, convention centers, doctors' offices, homeless shelters, transportation depots, zoos, funeral homes, day care centers, and recreation facilities including sports stadiums and fitness clubs. Private clubs and religious organizations are exempt from the ADA's title III requirements for public accommodations. Transportation services provided by private entities are also covered by title III.

Title III Applies to Who?

- Public accommodations must comply with basic nondiscrimination requirements that prohibit exclusion, segregation, and unequal treatment. They also must comply with specific requirements related to architectural standards for new and altered buildings. Additionally, public accommodations must remove barriers in existing buildings where it is easy to do so without much difficulty or expense, given the public accommodation's resources. Barrier removal need be accomplished only when it is "readily achievable" to do so. Readily achievable mean "easily accomplishable and able to be carried out without much difficulty or expense."

What Standards Apply to EV Charging Stations

- On March 15, 2012, compliance with the 2010 ADA Standards for Accessible Design will be required for new construction and alterations.

How Many Accessible Spaces Are Required Under the ADA?

- Where more than one parking facility is provided on a site, the number of accessible spaces provided on the site shall be calculated according to the number of spaces required for each parking facility.

Total Number of Parking Spaces Provided in Parking Facility	Minimum Number of Required accessible Parking Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	2 percent of total
1001 and over	20, plus 1 for each 100, or fraction thereof, over 1000

What About Access Aisles?

- Access aisles serving car and van parking spaces shall be 60 inches (1525 mm) wide minimum. Access aisles shall extend the full length of the parking spaces they serve. Access aisles shall be marked so as to discourage parking in them.

What About Accessible Routes?

- Parking spaces that serve a particular building or facility shall be located on the shortest *accessible* route from parking to an entrance. Where parking serves more than one *accessible* entrance, parking spaces shall be dispersed and located on the shortest *accessible* route to the *accessible* entrances. In parking facilities that do not serve a particular building or facility, parking spaces shall be located on the shortest *accessible* route to an *accessible* pedestrian entrance of the parking facility.

Must EV Charging Stations Be Accessible?

- Even though federal accessibility standards do not specifically address electric vehicle (EV) charging stations, it is **required** to incorporate ADA accessibility requirements to in the design of and installation of commercial charging stations. EV charging stations are required to be accessible because they offer a service to the general public.

What Accessibility Issues Need to Be Considered?

- Connector and receptacle heights, special curb cutouts, and disabled parking access are some of the measures that may be necessary to make a charging station fully accessible for the disabled.

What Are Other Jurisdictions Doing?

- The State of California's Division of the State Architect has issued "Interim Disabled Access Guidelines for Electric Vehicle Charging Stations." In California the following requirements apply:

Total Number of Chargers Provided in Parking Facility	Minimum Number of Accessible Charger Spaces Required
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4

A 9-foot wide space by 18 foot deep space is required. An access aisle of 5 feet on the passenger side is also required. One in every eight accessible chargers, but not less than one, should be van accessible with an 8-foot access aisle.

What Are Other Jurisdictions Doing?

- The State of Washington has developed the Electric Vehicle Infrastructure (EVI) Deployment Guidelines which includes accessible equipment, signage, and barrier free routes to charging equipment and the building. In Washington, the following requirements apply:

Total Number of Chargers Provided in Parking Facility	Minimum Number of Accessible Charger Spaces Required
1 to 50	1
51 to 100	2
101 to150	3
151 to 200	4
201 to 250	5
251 to 300	6

The barrier free area adjacent to the Designated Accessible Space shall be striped and be 60” or 90” wide.

What If It Costs Too Much?

- Alterations made to provide an accessible path of travel to the altered area will be deemed disproportionate to the overall alteration when the cost exceeds 20% of the cost of the alteration to the primary function area.

EV Stations and The ADA

- Design requirements provided by the 2010 ADA Standards for Accessible Design can and should be applied in the design and installation of all publicly available EV Charging Stations.